JUNE 25, 1960

Chemical Week

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Second-half prospect– CPI business looks good, but not up to earlier hopes . . . p. 25

$12-million giveaway introduces newlyweds to basic household specialties . . . . p. 63

Fresh look at water: plentiful supply, but under stricter control . . . . . p. 67

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▲ DECISION-MAKER BEUTEL RIDES HERD ON DOW'S TEXAS

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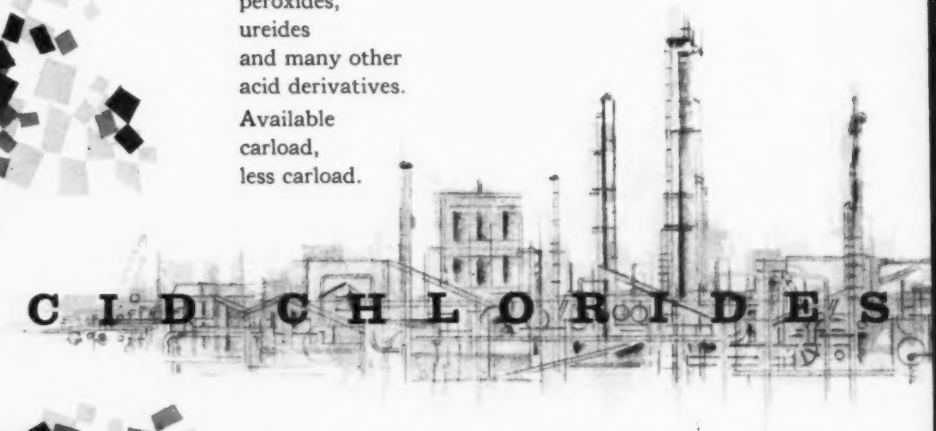

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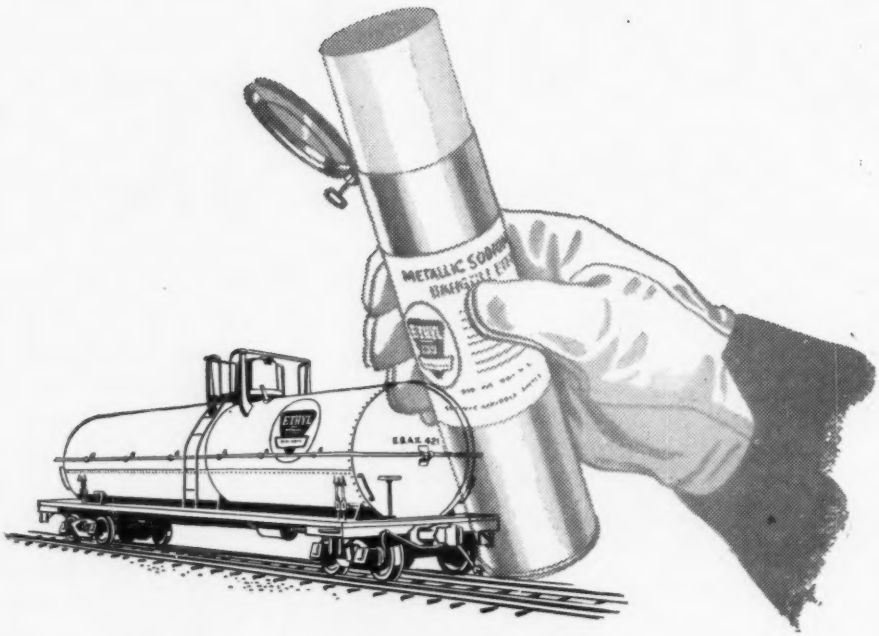

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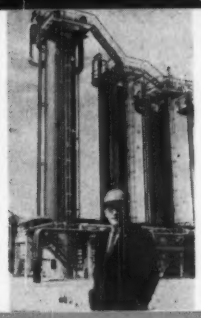

ON THE COVER: Colorful styrene finishing towers at Dow Chemical Co.'s Texas Division plant in Freeport are the background for Russell Lee's photograph of Dutch Beutel.

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Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., James H. McGraw (1860-1948), founder. EXECUTIVE, EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: McGraw-Hill Building, 330 West 42nd St., New York 36, N. Y. Place of publication: 3rd and Hunting Park Ave., Philadelphia 40, Pa. Second class postage paid at Philadelphia. (See below for directions regarding subscriptions or change of address.) OFFICERS OF THE PUBLICATIONS DIVISION: Nelson L. Bond, president; Shelton Fisher, Wallace F. Traendly, senior vice-presidents; John R. Callaham, vice-president and editorial director; Joseph H. Allen, vice-president and director of advertising sales; A. R. Venezian, vice-president and circulation coordinator. OFFICERS OF THE CORPORATION: Donald C. McGraw, president; Joseph A. Gerardi, Hugh J. Kelly, Harry L. Waddell, executive vice-presidents; L. Keith Goodrich, vice-president and treasurer; John J. Cooke, secretary.

United States and United States possessions subscription rate for individuals in the field of the publication, $3 per year; single copies, 50¢. Foreign subscription rates per year: Canada, $4; other Western Hemisphere countries, $15; all others, $25, payable in advance. Printed in U.S.A. Title registered in U.S. Patent Office,

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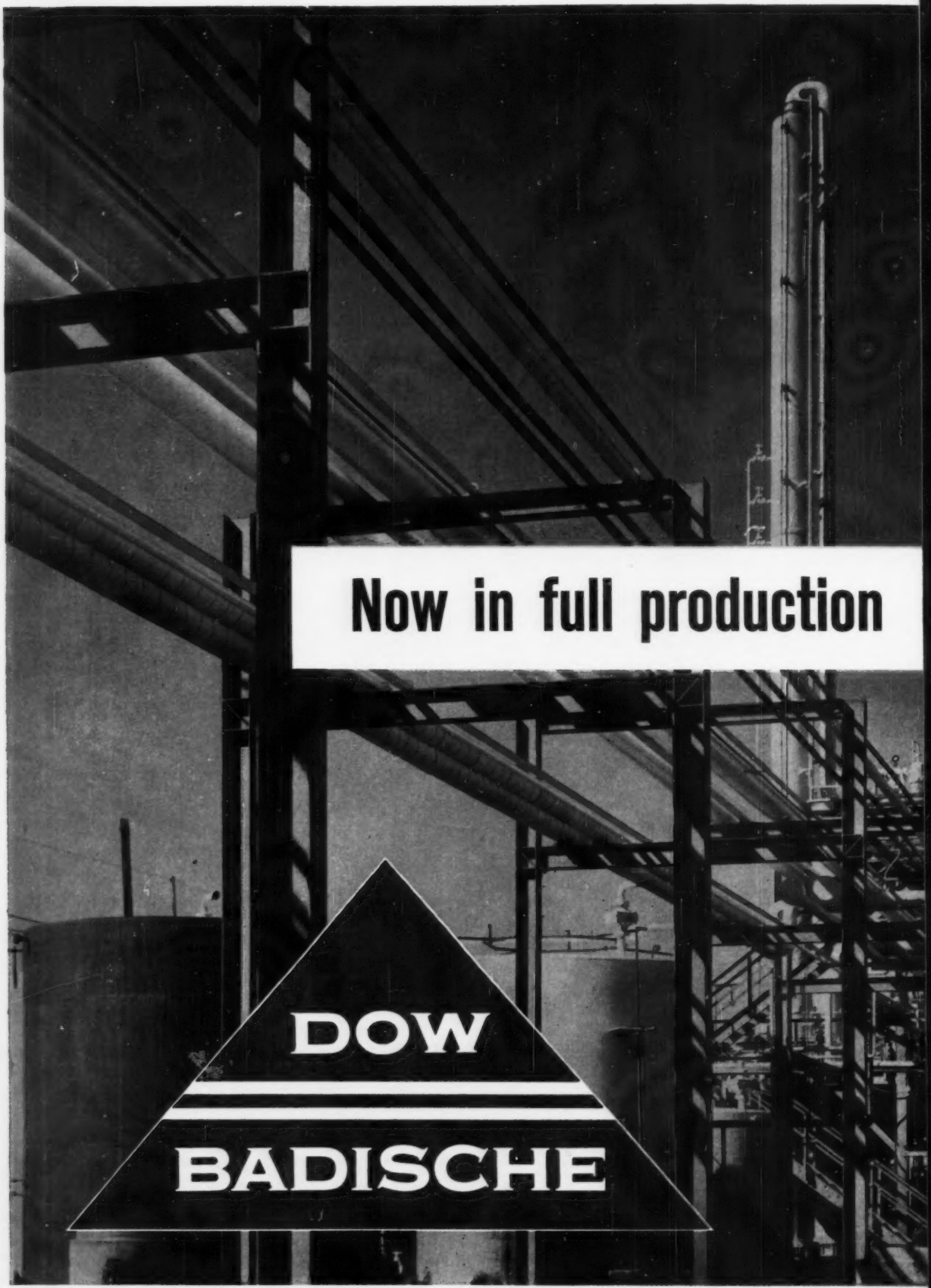
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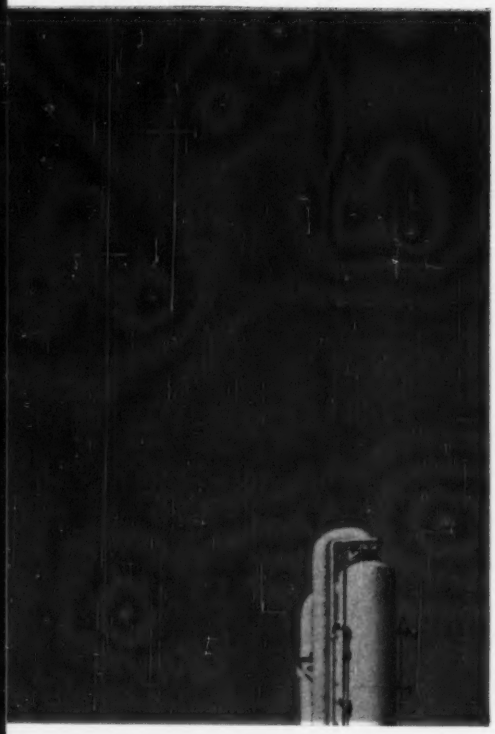

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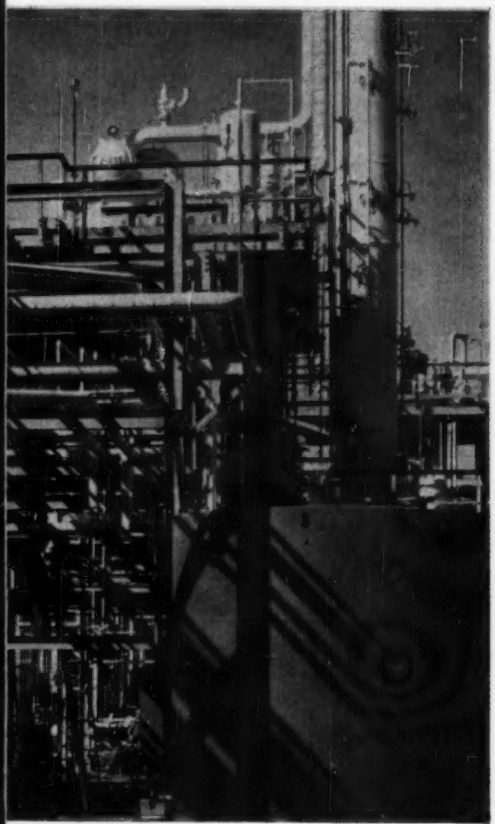

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VIEWPOINT

MCA's Boy-Size Budget

DO YOU BELIEVE IN PUBLIC RELATIONS, OR DON'T YOU? That's the basic question the Manufacturing Chemists' Assn. must answer for itself.

At its recent annual meeting MCA voted—by a show of hands, and with no discussion from the floor—an operating budget that included $296,000 for public relations. Perhaps someone should have risen to his feet and asked, "Is it enough?" It is certainly not an impertinent question, since the association, by voting any money at all, has demonstrated its belief that public relations activities are useful.

It first demonstrated that belief 10 years ago, when it set up a formal PR program. At that time an editorial in "Chemical Industries" said: "The favorable reaction to MCA's announced intention to step up its chemical industry public relations activities is an encouraging sign. A number of industry leaders have been arguing for some time for an intensification of effort in this direction—on both an industry basis and an individual company basis . . . Where cooperative work through a trade association can be most effective is in carrying the story of the industry as a whole to the broader reaches of the public."

What has happened in the ensuing 10 years? The program has moved along unspectacularly—first under MCA's own staff, then under an outside agency, and finally under MCA again. The budget has inched up from about $175,000 in '52, but it's still at a modest figure—as if the association regarded PR as "the thing to do" rather than as a tool to get a job done.

Why do we say the budget is modest? Simply by comparison with the money spent by other industry associations, such as the American Iron and Steel Institute, the American Petroleum Institute, the private electric utilities and the railroads.

The chemical industry's problems are different, certainly, but they are no less difficult. In a '58 report to the MCA board of directors by its public relations policy committee, the problems are listed: fear of chemicals; lack of understanding of chemistry as a vital function in modern life; lack of understanding of how the chemical industry operates; lack of public understanding of industry's role in the growing importance of science and technology.

The same report recognized limitations upon MCA's scope in attacking these problems: "It has a limited staff and budget. Its capabilities for industry public relations are limited to that permitted by the best use of staff and budget."

The problems are still as acute—more acute, likely, in view of the cranberry incident, the drug hearings, the chemicals-in-foods controversies and the fluoridation fracases. In the Jan. 23 issue we asked (*Viewpoint, p. 16*), "How's the chemical industry's image these days? Is it a good one . . . ? It would be nice to say that . . . , to talk like Pollyanna and be glad that the chemical industry is doing so many good things. But we'd all be fooling ourselves . . ."

We don't suggest for a minute that MCA is spending its money unwisely, or that merely appropriating more money would automatically ensure solution of these problems. Nor do we overlook the good PR being done by individual companies and by the several regional committees.

What we do suggest is that a $26-billion industry is looked upon with unjustified disfavor by the public at large, and that this disfavor can lead to crippling counteractions. This is no time to send a boy-size budget to do a man-size job.

Chemical Week

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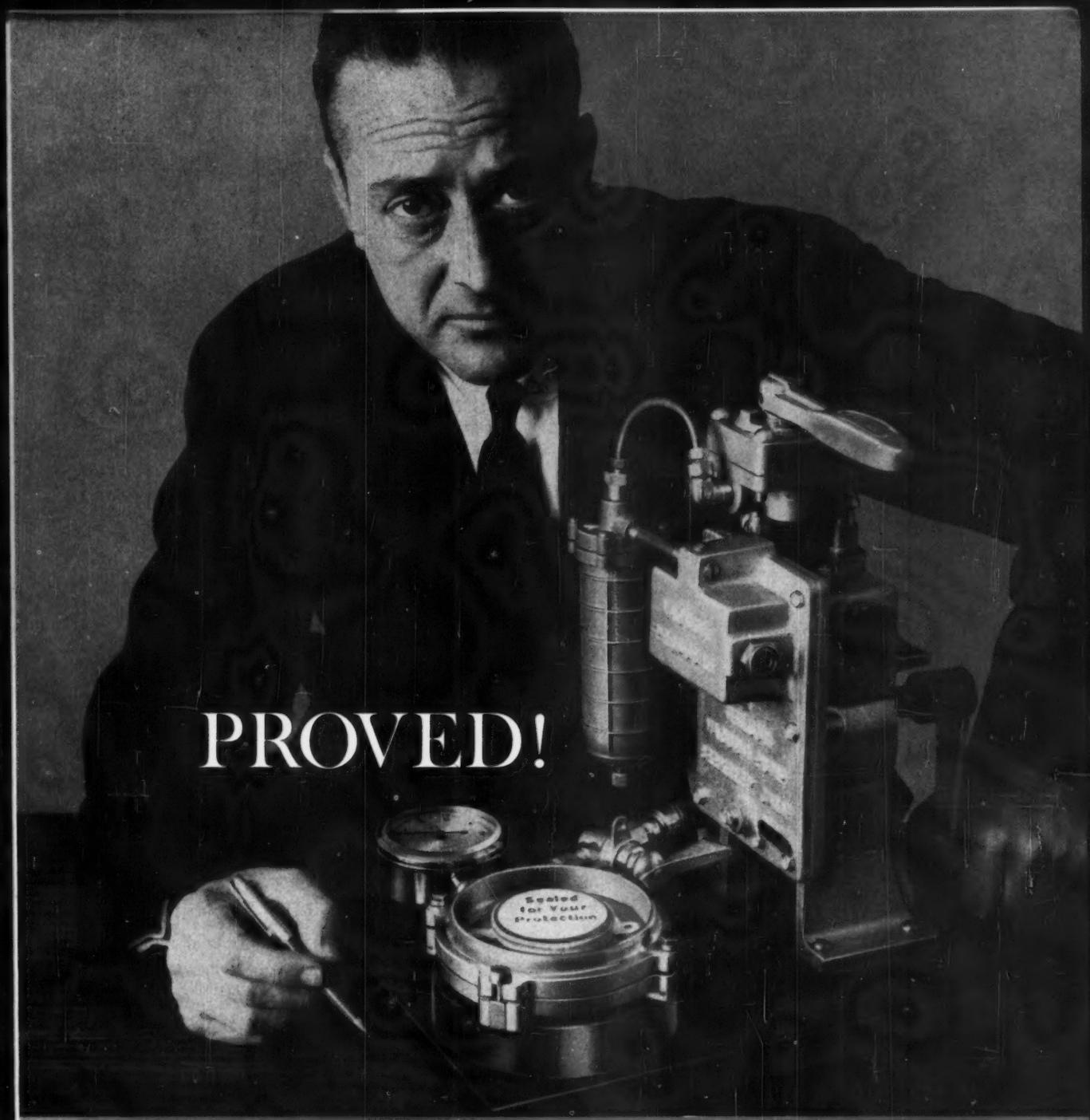

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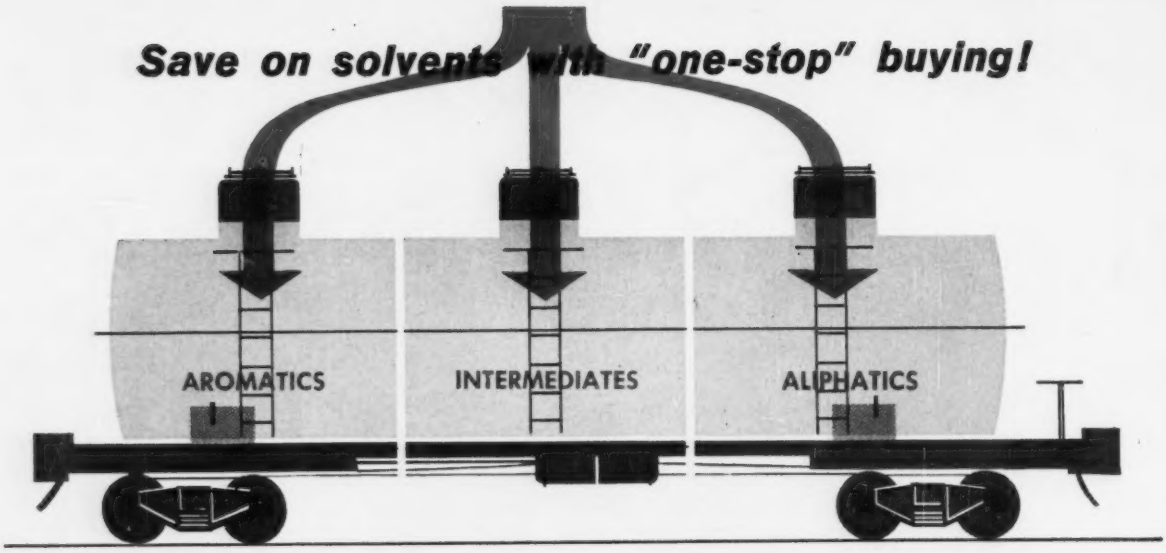

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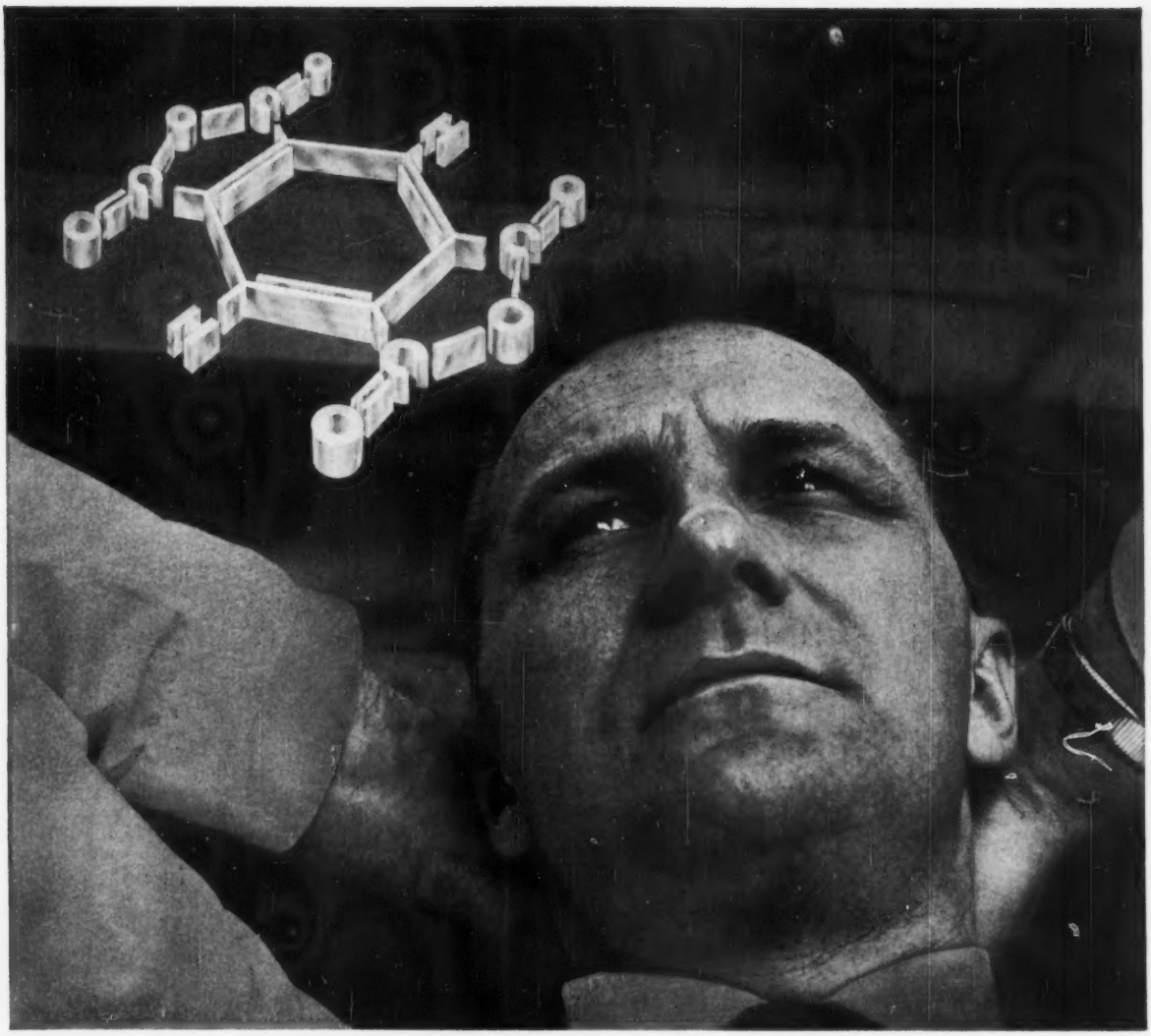

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LETTERS

Plastic Police Needed

To THE EDITOR: [Your] "Viewpoint" (*June 4, p. 5*) certainly has my wholehearted support and describes precisely the needs of plastics for the building trade.

We are one of the small army of manufacturers' representatives who have for many years crusaded to obtain acceptance of plastics as piping materials. Lack of specifications, poor standards, price competition and price-cutting have all been instrumental factors inhibiting the rate of growth of this industry.

Some of the factors you point out have resulted in certain large users' buying products by tradename only. In other words the quality of a PVC pipe is only as good as the integrity and ability of the extruder.

Since most extruders are members of S.P.I., this group, which has accomplished a great deal, is not in a position to police the industry. An unbiased group, equal in power and strength to the [American Iron and] Steel Institute or the Copper Institute, is the real answer to bring order out of chaos, to intelligently and honestly represent qualities and abilities of performance.

Education of engineers to "buy" quality will go a long way toward upgrading respect and obtaining satisfactory performance.

J. F. POSTELL
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Trademarks Are Nicknames

To THE EDITOR: After reading your article "Trademarks: Silent Salesmen in New Role" (*May 28, p. 47*) I felt that a few comments might be apropos.

Increasingly it is disturbing to see trademarks being suggested as salesmen for products. In relationship with the customer a trademark . . . is an aid to making it easy for the customer to purchase a material. It provides him with a quick handle to insure that there is no misunderstanding between his needs and the goods the vendor has to offer. The trademark becomes a common denominator that can be used by anyone at the customer's plant and anyone at the vendor's plant.

Often, to me, trademarks are really nicknames. . . . If a trademark is considered in this light rather than as a salesman for a product, it becomes what I prefer to describe as a sales aid. . . .

Trademarks help internally in a company by making it possible for management quickly to recognize information, orders and research and development work being done on a particular product. Often, though, if the product nomenclature is simple, a trademark will not help to simplify communications and it is just as simple and profitable to use the given name.

As a criterion for trademarks, I should like to suggest the requirements that they simplify communication between the customer and ourselves and eliminate misunderstanding.

R. S. NAEGELE
Manager, Silastic Sales
Dow Corning Corp.
Midland, Mich.

MEETINGS

Gordon Research Conferences at Colby Junior College, New London, N.H.—June 27-July 1, nuclear chemistry; July 4-8, polymers; July 11-15, textiles; July 18-22, corrosion; July 25-29, separation and purification; Aug. 1-5, instrumentation; Aug. 8-12, food and nutrition; Aug. 15-19, medicinal chemistry; Aug. 22-26, catalysis; Aug. 29-Sept. 2, cancer.

Gordon Research Conferences at New Hampton School, New Hampton, N.H.—June 27-July 1, proteins and nucleic acids; July 4-8, chemistry and physics of isotopes; July 11-15, statistics in chemistry and chemical engineering; July 18-22, radiation chemistry; July 25-29, organic reactions and processes; Aug. 1-5, steroids and other natural products; Aug. 8-12, organic coatings; Aug. 15-19, analytical chemistry; Aug. 22-26, inorganic chemistry; Aug. 29-Sept. 2, adhesion.

Gordon Research Conferences at Kimball Union Academy, Meriden, N.H.—June 27-July 1, physical metallurgy: relation of structure and properties; July 4-8, chemistry at interfaces; July 11-15, chemistry, physiology and structure of bones and teeth; July 18-22, high-pressure research; July 25-29, chemistry and metallurgy of semiconductors; Aug. 1-5, solid-state studies in ceramics; Aug. 8-12, chemistry and physics of solids: point defects; Aug. 15-19, toxicology and safety evaluations; Aug. 22-26, infrared spectroscopy; Aug. 29-Sept. 2, high-temperature chemistry: kinetics of vaporization and condensation processes.

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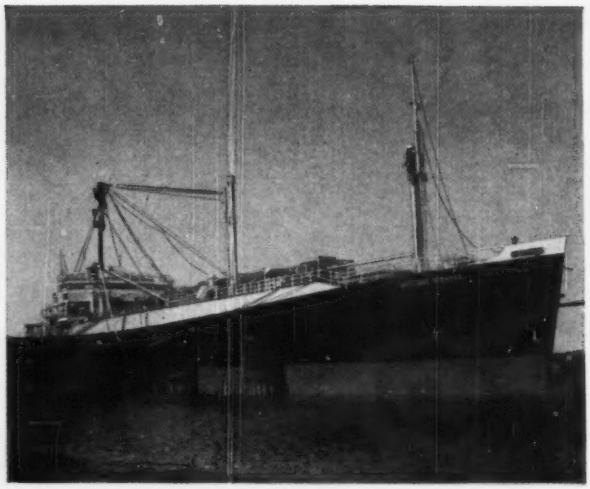
FABRICATION SAVINGS

Aluminum is easy to handle, easy to join and form. It welds and cuts quickly, often reducing fabricating costs. And it is non-magnetic, non-toxic, and non-sparking, safer to use with volatiles. Finally, *aluminum is one of the lowest-cost corrosion resistant materials available.*

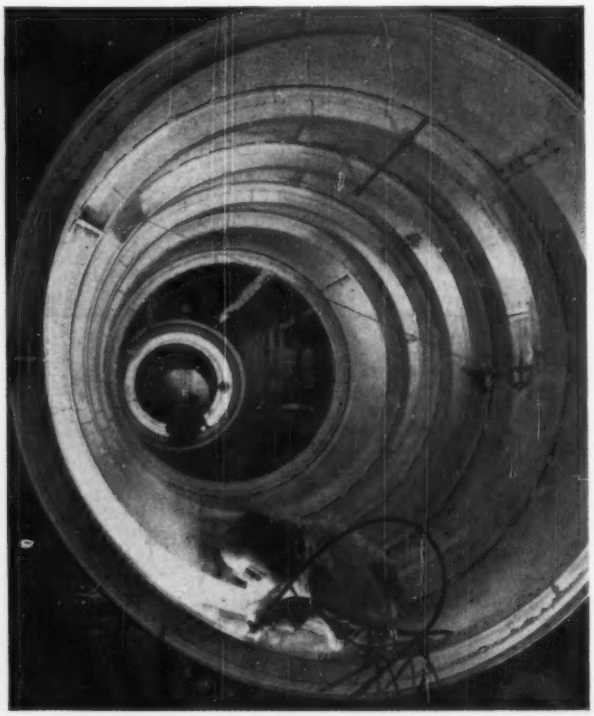
When you design any equipment for low temperature use, be sure to consider the economics and the low temperature strength of aluminum. For full information on aluminum for low-temperature duty, contact your local Reynolds office, or write *Reynolds Metals Company, P.O. Box 2346-CM, Richmond 18, Virginia.*

REYNOLDS ALUMINUM

Watch Reynolds TV Shows: "Bourbon Street Beat" and "Adventures in Paradise"; and, resuming in October, "All Star Golf"—ABC-TV



Ship designed to carry liquefied methane (at −260°F) to England. Liquid is kept in 6,000-barrel tanks made with Reynolds Aluminum plate, the one economical material with improved strength at low temperatures. Aluminum is also used in piping and processing equipment.

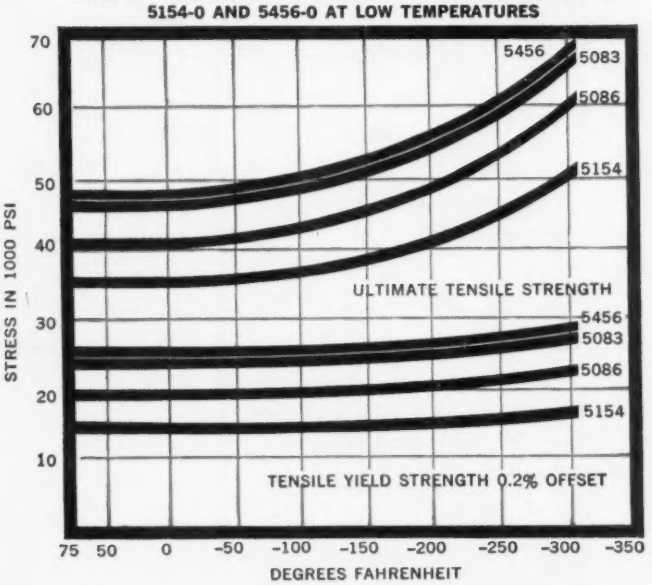


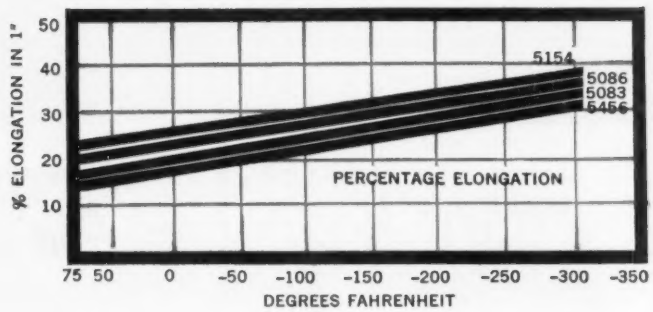
Aluminum welds quickly and easily by all common welding methods—as in this liquid gas tank fabrication. It also cuts and forms easily, often effecting savings in construction. And it is one of the most economical corrosion-resistant materials.

Why Aluminum for Low Temperature Equipment?

- **when temperatures go down, aluminum's strength goes up**
- **aluminum is light in weight**
- **aluminum is easy to fabricate**

TENSILE PROPERTIES OF ALUMINUM ALLOYS 5083-0, 5086-0, 5154-0 AND 5456-0 AT LOW TEMPERATURES





In the strange world of minus 250°F and below, materials often take on new and different properties—a fact which demands special design consideration for low temperature equipment.

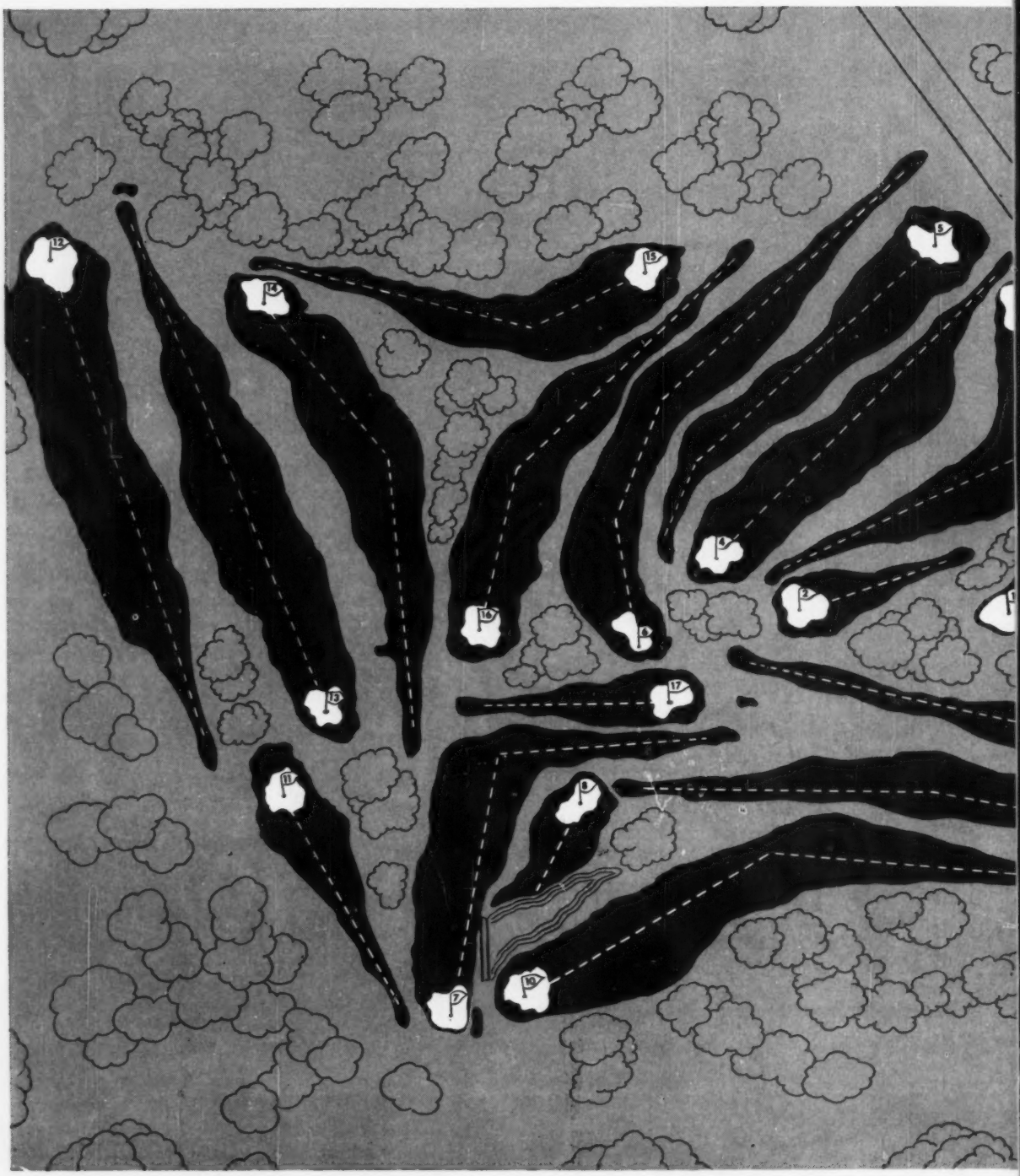
And more and more frequently, designers are finding that aluminum, better than any other material, meets the mechanical, thermal and economic requirements for these "cryogenic" jobs.

For example, low carbon steels lose so much impact strength at low temperatures that they can't usually be considered. Nickel-alloy steels have better strength than low carbon steels, but in many cases are more expensive to fabricate than aluminum. Aluminum is one of the lowest-cost metals that retains or improves its impact strength at low temperatures.

LOW TEMPERATURE STRENGTH

Aluminum's properties change at sub-sub-zero temperatures, just as all metals do, but the change is for the better. The yield strength, tensile strength and percentage elongation of aluminum all *improve* as temperatures approach absolute zero. This is not true of all metals: Ferritic steels become brittle at low temperatures; the mechanical properties of stainless steel are improved, but it is costly when compared to aluminum.

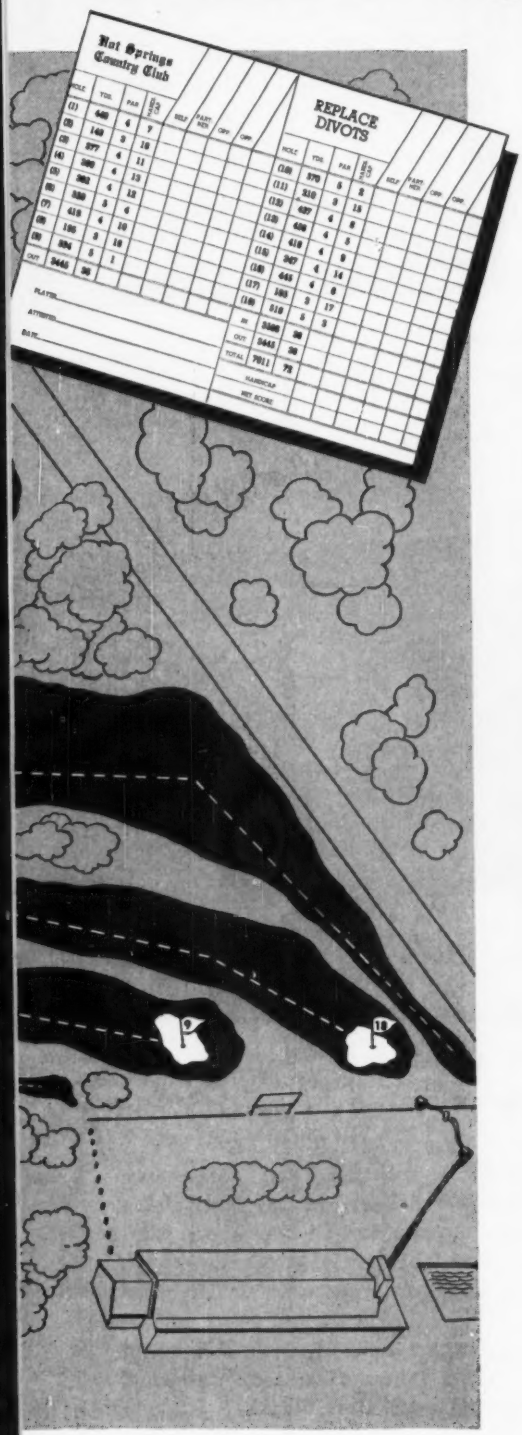
What do the Country Club of Hot Springs



COURSE OF CHAMPIONS—The Arlington course at the Country Club of Hot Springs annually attracts many of the top names in golf for the $22,000 Hot Springs Open Golf tournament. Hot Springs has many other claims to fame. It can boast of three separate eighteen hole courses, boating, swimming and fishing facilities and a climate that is hard to match.

HERCULES FATTY AMINES ALWAYS C18

and Hercules Fatty Amines have in common?



Answer: 18

Even a pro needs a little luck to make par around eighteen holes. But when it comes to Hercules new fatty amine—marketed under the trade names Delamin® and Delamate®—there's no luck involved. A combination of extensive research and advanced quality control methods on fatty acids of pine origin has resulted in a single species of amine—always *eighteen*-carbon, straight chain material.

What does this mean to you? For one thing it means you can avoid the technical uncertainties involved when several species of amine are present. The high uniformity of quality that you can expect from Hercules amines results in easier quality control for your finished product.

Both Delamin and Delamate products are finding numerous uses due to their strong cationic properties and ability to attach themselves to negatively charged surfaces. In addition, Delamin amine can be converted into many other salts and derivatives which should be of primary interest for synthesis of compounds in such fields as pharmaceuticals, insecticides, disinfectants, and preservatives.

We've prepared a new 10-page booklet providing detailed information on the properties, reactions, and uses of these products. We'd like to send you a copy. If you have a specific problem, we'll be glad to assist in its solution. Just write:

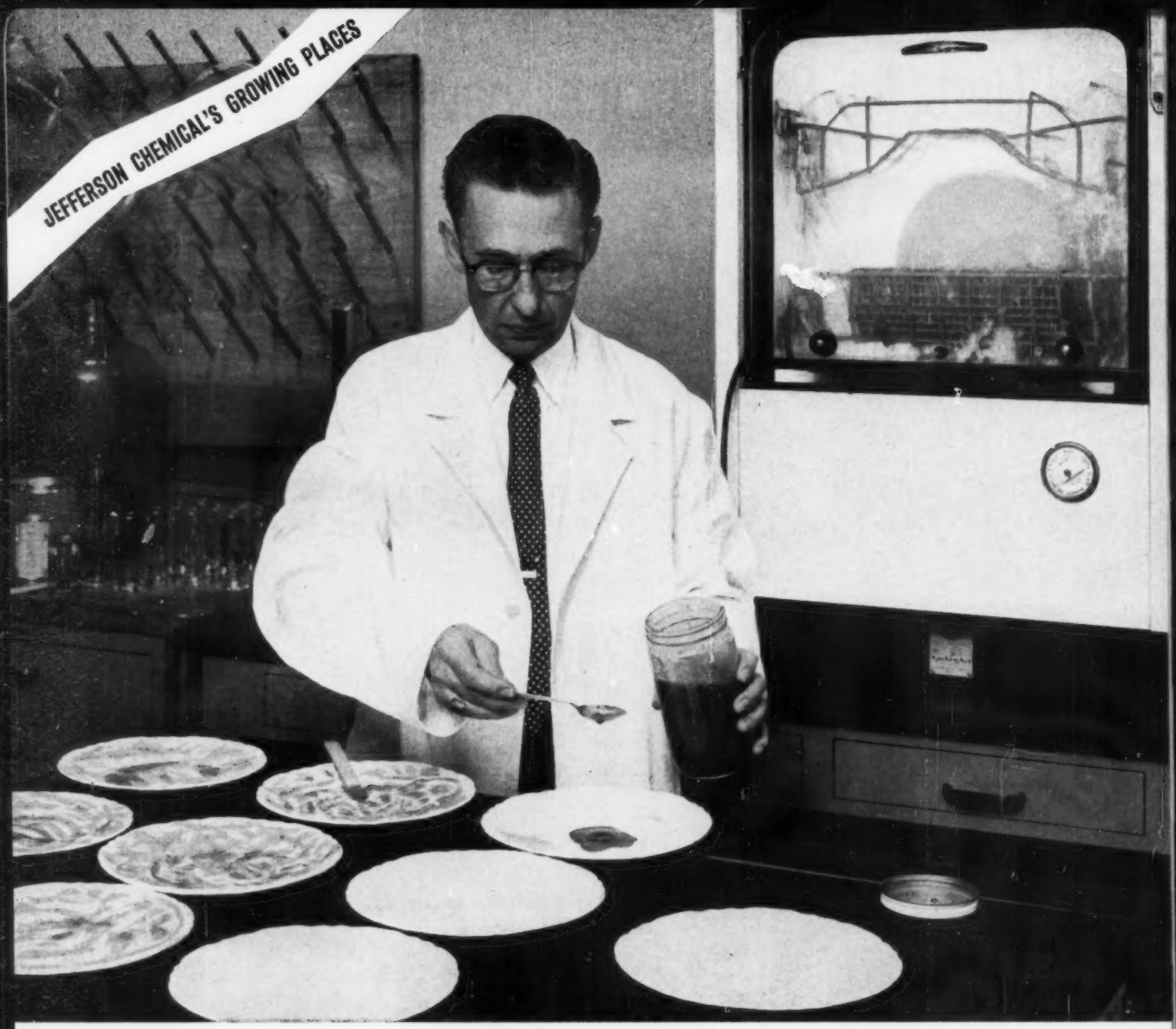
Pine Chemicals Division, Naval Stores Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

NA60-2



Standard Gravy

Take a batch of beef gravy, a few jiggers of tomato paste, a mite of vegetable shortening, a dash of H_2O and you have *Standard Gravy*. Unpalatable . . . yes. Unscientific . . . no. *Standard Gravy* helps tell us a great deal about the effectiveness of low-foaming, light-duty detergents.

These gravy-stained plates are put through standard dishwashing cycles with precisely milk-stained glasses. The gravy provides a uniform work load for the detergent, and the milk-coated glasses serve as a measuring stick. We vary the composition of the detergent and see which formula makes the glasses come out spotless. Of course, we combine this with other laboratory determinations . . . it's all part of helping our customers make better products.

For the many other areas of practical Jefferson research . . . contact Jefferson Chemical Company, Inc., 1121 Walker Avenue, P. O. Box 303, Houston 1, Texas.

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JEFFERSON CHEMICALS

053

Business
Newsletter

CHEMICAL WEEK
June 25, 1960

Socony Mobil is reorganizing its petrochemical units. The big oil company is setting up Mobil Chemical Co. as a new operating division to produce and sell new chemical products, to undertake joint ventures in the U.S. and abroad, and to be responsible for major petrochemicals now produced at Socony Mobil facilities.

Currently Mobil tots up its sales of chemicals and related products—paints, petroleum additives, catalysts, petroleum coke and other products—at some $90 million/year. The new company will not be limited as to types of products, says Socony Mobil President Albert L. Nickerson. President of the new division: Paul V. Keyser, a senior vice-president of Socony Mobil.

Coming under the wing of the new division is the big, high-purity ethylene plant under construction at Beaumont, Tex., planned for '61 completion. The 380-million-lbs./year plant will form the hub of a chemicals complex with other companies reportedly planning to build plants to use its products (*CW, Oct. 24, '59, p. 26*). Also to be part of the new Mobil Chemical Co.: Socony Paint Products Co., with plants in Beaumont, Los Angeles, and Metuchen, N.J.; Socony's petroleum additive business, and other specialized chemical products manufacture.

•

Some gloom is dispelled for U.S. rayon tire-cord producers—at least for the coming year. Detroit reports the original equipment tire for virtually all '61 standard passenger cars will use rayon tire cord. Previously, there had been speculation that this coming year might see "the big switch" from rayon to nylon in some major car makes.

While selection of rayon tire yarn won't stem the narrowing of rayon producers' profit margins, original-equipment tires make up about one-third of the $300-million tire-cord market. And William Dalton, president of Tyrex, Inc.—representing five coordinated rayon tire-cord producers—predicts a 20% increase in Tyrex sales by '62; even greater gains by '65 as both product improvement and process improvements are initiated. Meanwhile, he contends, Detroit feels that rayon tire cord still fits in best with today's chassis and suspension engineering.

•

Two chemical companies are picking up new lines:

• A new company, Dowell Schlumberger Corp., has been formed by the Dowell Division of Dow Chemical and Schlumberger, Ltd. To be headquartered in London, the new firm will offer all Dowell services and Johnson Testers' drill stem testing in countries other than the U.S. and Canada. It's still another job for A. P. Beutel, general manager of Dow's Texas Division (*see p. 35*). He will act as chairman of the board of directors of the new corporation.

• Food Machinery and Chemical Corp. has been holding pre-

liminary merger discussions with Saco-Lowell Shops, Boston-headquartered textile machinery manufacturer.

J. M. Pope, FMC's financial vice-president, says that talks still could go either way, and that "certain contingencies" must be settled before specific negotiations could take place.

•

Canadian oil, chemical and rubber industries are pushing for prompt sale to private industry of Canada's government-owned synthetic rubber producer, Polymer Corp. While the future of the Sarnia, Ont., company, in which the government invested $50 million 18 years ago, will be largely decided by cabinet committee studies just now being undertaken, industry argues that in the light of changing world rubber conditions and Polymer's heavy dependence on export (about 70% of its production), the committee should act quickly in calling for bids.

Private ownership, industry reasons, would enable Polymer to set up plants in Europe as its U.S. competitors are doing. Another reason: as a private company, it could take better advantage of research teams and management built up over the years. Admittedly one possible bidder: Goodyear Tire & Rubber (Canada).

Although the $75-million offer by Ventures, Ltd., was turned down by the government last year, this year it's believed top bids would be about $10 million less. Industry men say additional millions in new capital would be needed to make the company fully competitive.

•

Mexico wants and expects private investments in petrochemicals, a government spokesman declared this week at the first international congress of chemical engineering. More than 1,000 delegates—many from the U.S., Europe and South America—are attending the sessions. Predicted growth of chemical consumption in all Latin America: from $2.7-billion production and some $500 million worth of imports in '55 to a total market of $8.2 billion in '75.

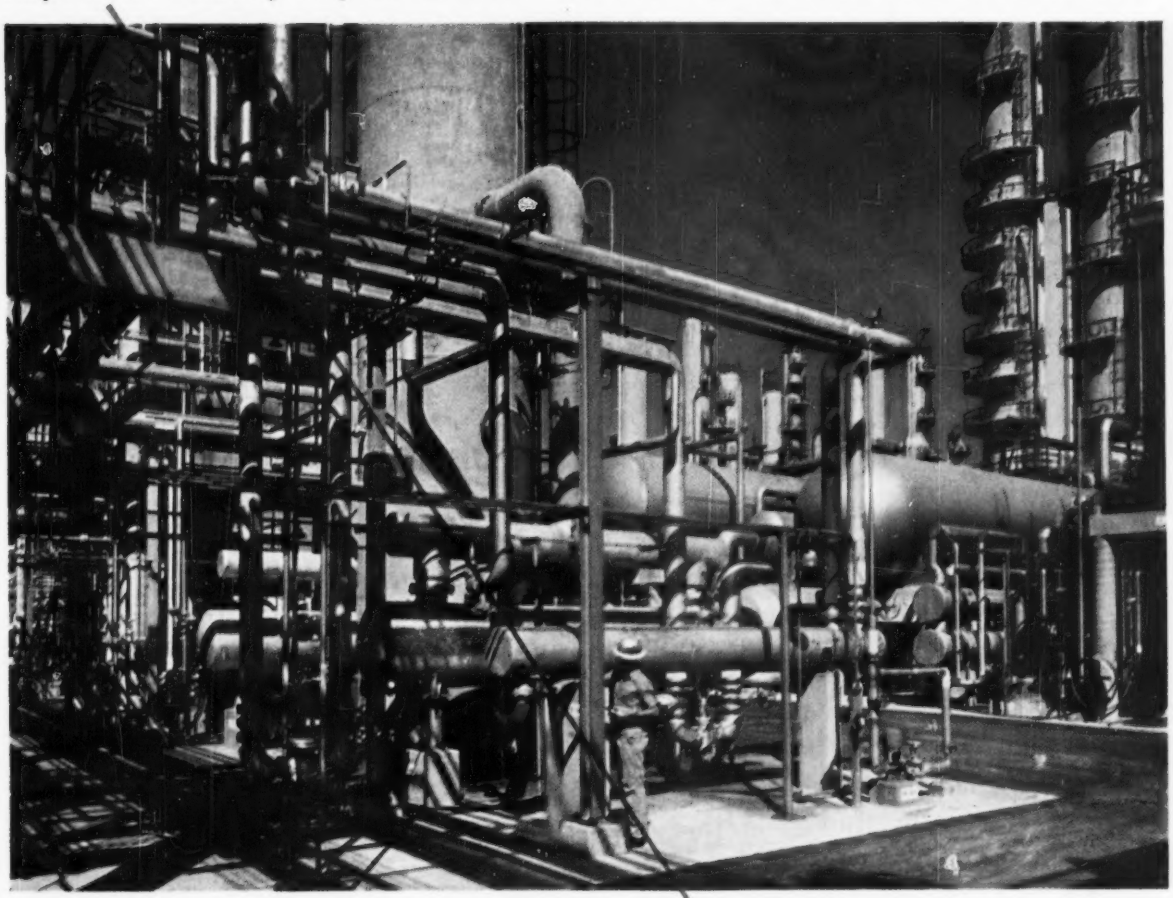
•

Elsewhere CPI investors are facing less inviting prospects. Eruption of leftist sentiment in Japan, and the probable downfall of the Kishi government, are expected to put the brakes on that country's recent moves toward liberalization of trade and foreign investment policies. In Spain the government-owned INI now seems likely to edge out both private contenders—Standard Oil of New Jersey and Royal Dutch Shell—for the right to put up the proposed $70-million petrochemical project that would supply the entire domestic market.

•

A new producer of primary aluminum may be onstream next year. United Pacific Aluminum Corp.—a Los Angeles fabricator—says it will let a contract soon for building a $10-million reduction plant on the Columbia River near Longview, Wash. Bauxite will be imported—"either from the Orient, Africa or the Caribbean."

Important Quality Improvements in *Petro-Tex n-BUTENE-1*



Deliberate removal of undesirable olefins from our commercial production of Petro-Tex n-Butene-1 has resulted in a very substantial quality improvement over the past two years.

Our specifications guarantee a minimum purity of 95% Butene-1, maximum water content of 100 ppm *and no butadiene whatsoever.* But a typical analysis of our commercial production as shipped is: Butene-1 *98.0%;* Isobutylene *0.6%;* Butene-2 *0.8%;* n-Butane *0.6%* and water 20 ppm. In most chemical reactions, these impurities are not detrimental.

Petro-Tex n-Butene-1 is now being used by important linear olefin polymer producers. As a highly reactive alphaolefin, it undergoes a wide range of oxidation, hydration, alkylation and oxo-process reactions which commend study of its use for n-butyl alcohol, butylene oxides as well as various copolymers and petrochemicals.

We invite inquiries on Petro-Tex n-Butene-1 and

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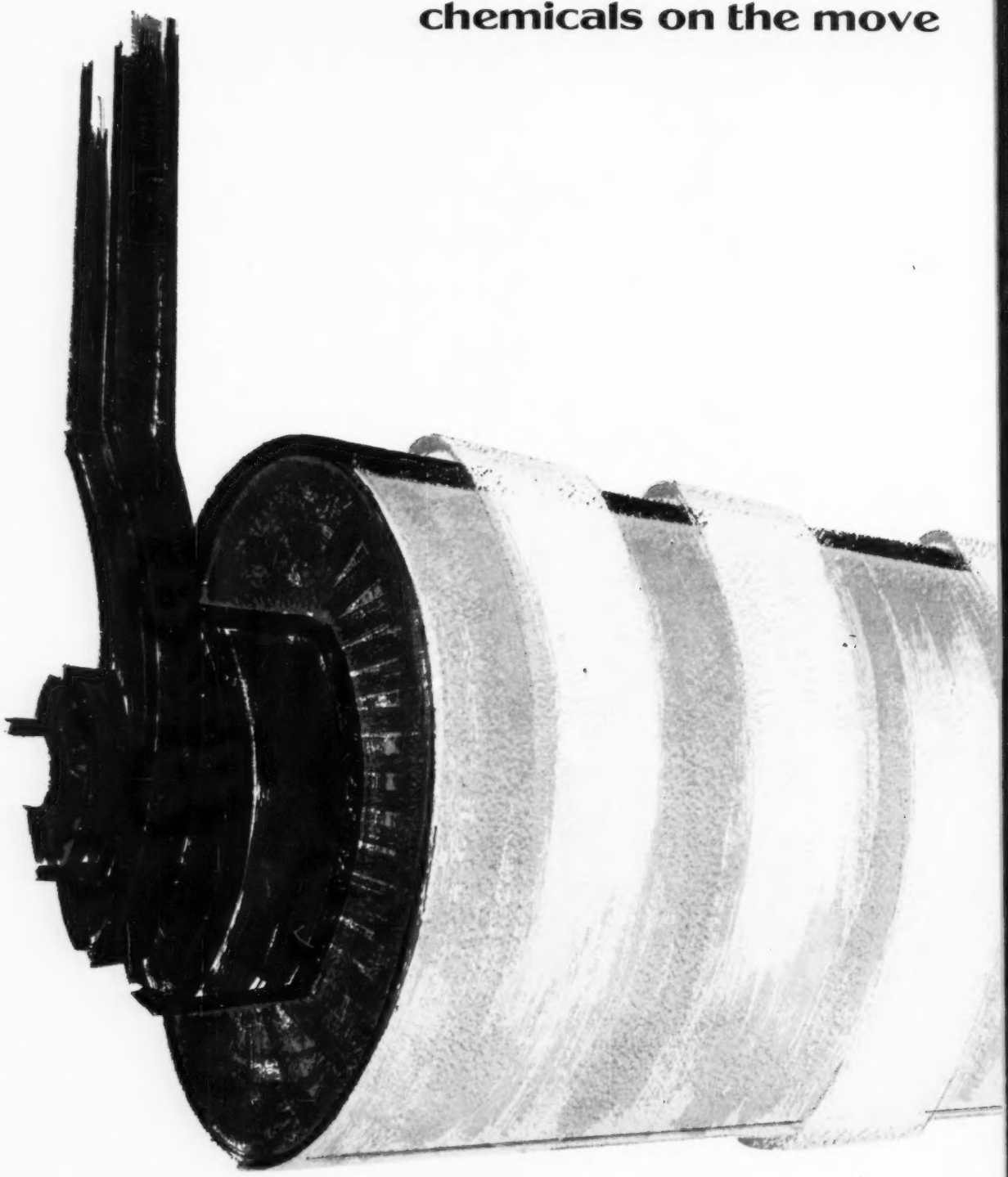
chemicals on the move



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WHERE RESEARCH TODAY MEANS PROGRESS TOMORROW

(Advertisement)

PTSA

(*para*–toluenesulfonamide)

new, cheaper way to make non-blotching mildew-resistant paints and coatings

One of the paint maker's (and professional painter's) nightmares is the appearance of dark brown or black blotches on a relatively new paint job. Almost as bad is the onset of a generally dingy look. Often when this happens the irate homeowner or maintenance man blames either the painter or "cheap paint." But, the real culprit is usually: mildew!

The AMERICAN PAINT AND WALLPAPER DEALER (Vol. 46, 1954) reported from a survey covering hundreds of house exteriors that mildew is the major cause of painted-surface disfiguration; 68% of the homes observed were marred by stains and blotches that had nothing to do with dirt or paint failure!

Paint makers recognize the problem, but most have been discouraged by the cost of making their paints immune to mildew attack. Until recently, the cost of a fungistatic additive ran about 50¢ per gallon of paint. Now a new fungistat, paratoluenesulfonamide, promises to cut this cost by at least one half!

Structurally, PTSA is distantly related to sulfanilamide, but as a volume-produced intermediate it is quite low in cost. Nonetheless, PTSA is a "wonder drug" in its own right as far as making paint and varnish films immune to mold stain and to decay by microorganism attack.

Paint makers first got wind of this low-cost way to make fungus-resistant paints from a report: "Tropical Performance of Fungicidal Coatings," Part I, by J. M. Leonard and A. L. Pitman, of the Naval Research Laboratories. According to the NRL report, PTSA gave excellent mildew protection to the varnishes used for electronic equipment in jungle service. Subsequent studies showed that PTSA was equally effective in a variety of protective coatings. Among these, tested in the steamy jungles of Panama, were white house paint, barn paint, lacquers and tung-oil varnishes!

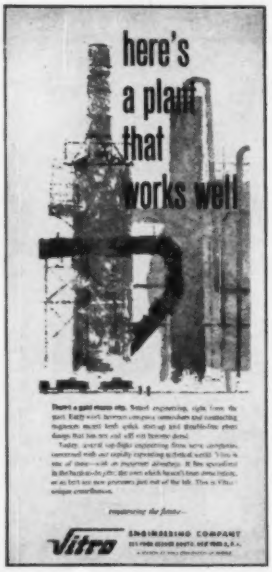
The NRL work started years ago when it became apparent that fungitoxic varnishes were badly needed for coating electronic equipment used in the moist, humid areas of the South Pacific. Primary function of the varnish was to impede moisture adsorption and to create a nonwetting surface of high electrical resistance. Out of 100 promising chemical compounds, the six best fungistats chosen for extensive evaluation were: PTSA, salicylanilide, phenylmercuric phthalate, pentachlorophenol, uranyl nitrate, and copper 8-quinolinolate. PTSA proved to be the best, either alone or in binary mixture.

In the initial testing, the vehicle was a phenolic resin and tung-oil varnish containing about 12.5 gallons of oil per 100 pounds of resin, closely resembling the coating prescribed by Specification MIL-C-173. The PTSA was simply added by grinding in on the ball mill. Samples of this varnish with various concentrations of PTSA were applied to cotton braid and exposed at tropical Coco Solo Panama Canal Zone temperatures. As little as 2% PTSA (on the nonvolatile) controlled mold attack even after 33 months of exposure. By this time the unprotected controls had virtually rotted away.

Subsequent test results with barn paints, white house (mill white) paints, iron oxide-linseed oil types, gloss alkyd enamels, lacquers and others confirmed that PTSA gave outstanding protection against mildew attack on all coatings subject to attack. The amount of PTSA needed varied with the particular formulation, and for each formulation there appeared to be a critical minimum level. For clear varnishes the required amount of PTSA was in the range of 2-4%; for paints, in the range of 6-8% or higher.

PTSA has several "pluses" for paint makers: it is an easily handled fine white crystal, compatible with coating vehicles and virtually non-toxic. It has no effect on pigmentation. Water-base paint makers, eyeing the possibilities of water-base exterior alkyds, are particularly interested. The reason is simple; some water-base paints are susceptible to mold and mildew attack before use. Some mold in the can! *Industrial and Engineering Chemistry* magazine (April 1959) estimates a half-million dollars was spent in 1958 for preservation of water-base paints alone. PTSA offers protection both in-the-can and after application. To the water-base paint maker, PTSA promises he can kill the two birds with one stone.

For futher information on paratoluenesulfonamide use in mildew-resistant paints and coatings, request a copy of Specialty Data Report CS-12. Write to: Monsanto Chemical Company, Organic Chemicals Division, Dept. 2770-Y, St. Louis 66, Mo.



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'Biggest Year' Yet— But 'Disappointing'

Evidence piling up this week from CPI companies across the nation roundly supports the thesis that '60 will be—in most respects— their biggest year to date.

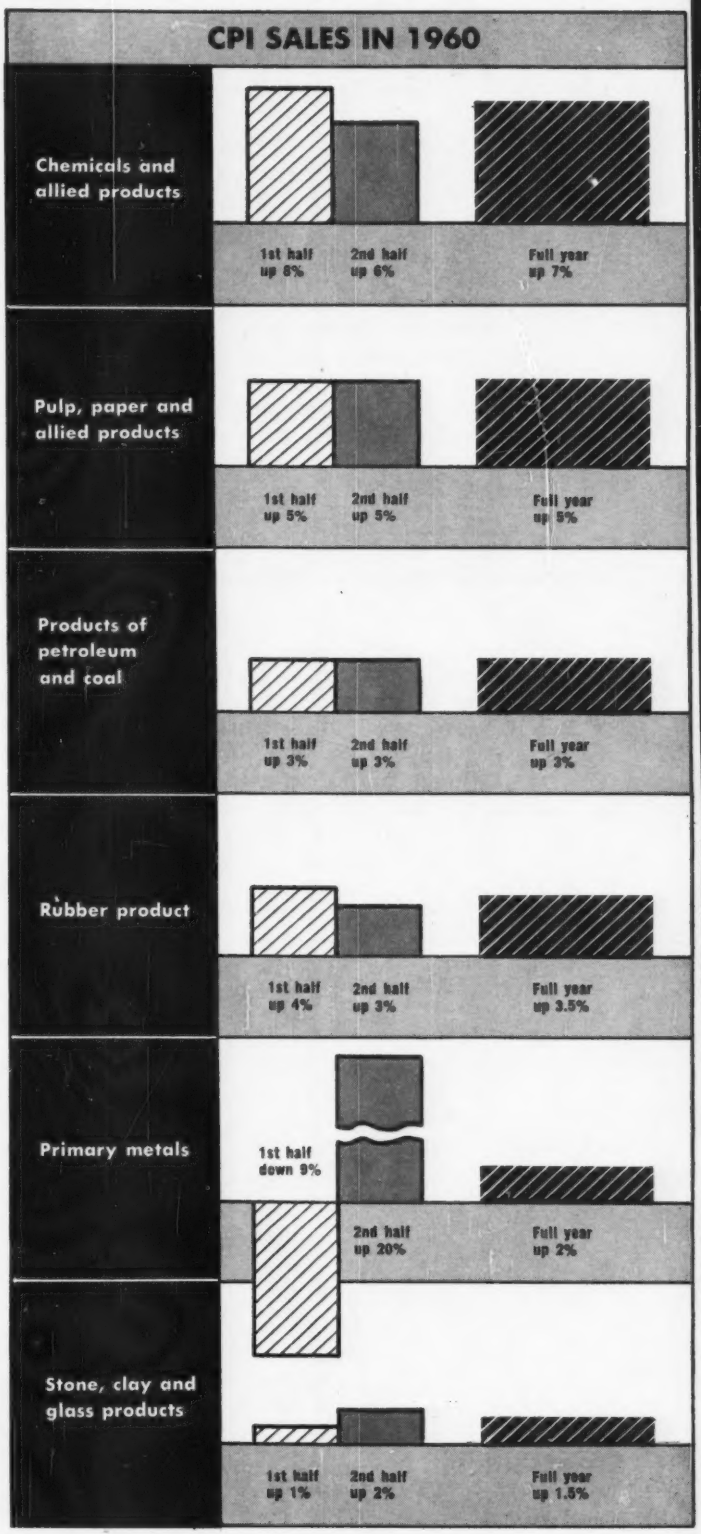
More specifically, according to corporate executives queried by CHEMICAL WEEK in a survey on the business outlook at midyear, '60 sales will show at least "average" gains from last year's peaks; most plants will be running at more than 80% of capacity throughout the year; and net earnings will increase or hold steady for most large concerns. Profit ratios, however, are in for a drop.

One oft-repeated lament encountered in this survey: '60 is not panning out as the 24-karat boom year that had been predicted last December. Nevertheless, indications as of last weekend were that the principal projections in CHEMICAL WEEK's '60 forecast *(CW, Dec. 26, '59, p. 63)* are still holding up well. It was projected, for example, that sales of chemicals and allied products this year would top $27 billion; and a few days ago the U.S. Dept. of Commerce reported that the January-through-April total was nearly $9.3 billion—equivalent to an annual rate of $27.9 billion. Similarly, capital spending during the year by producers of chemicals and allied products was put at $1.5 billion; and the Commerce Dept. and Securities & Exchange Commission have just computed a projection of $1.59 billion.

Pressure on Profits: One vital figure was overestimated: '60 net earnings of producers of chemicals and allied products were forecast at "just short of" $2.3 billion. Actual net income during the first quarter, as reckoned by SEC and the Federal Trade Commission, was $507 million—equivalent to an annual rate of $2.03 billion. This reflected the testimony by numerous executives that a price-and-profit squeeze is under way; the consensus is that earnings will be under increasing pressure throughout the second half of this year.

Probably the strongest segment of the chemical industry right now is production of synthetic resins. Most managers cited plastics as one of their best-gaining product lines this year; and their verdict is borne out by the government's report on first-quarter output. For the first three months of this year, production of polystyrene was up 16.7%, to 229.7 million lbs.; polyvinyl resins, up 20.4%, to 311.7 million lbs.; and polyethylene resins, up 27.7%, to 333.2 million lbs.

Weather Held Back Sales: In nearly all other product


CPI SALES IN 1960
Chemicals and allied products
1st half up 8%
2nd half up 6%
Full year up 7%
Pulp, paper and allied products
1st half up 5%
2nd half up 5%
Full year up 5%
Products of petroleum and coal
1st half up 3%
2nd half up 3%
Full year up 3%
Rubber product
1st half up 4%
2nd half up 3%
Full year up 3.5%
Primary metals
1st half down 9%
2nd half up 20%
Full year up 2%
Stone, clay and glass products
1st half up 1%
2nd half up 2%
Full year up 1.5%

Process Industries' First-Quarter Performance

(Dollar figures in millions. Sources: FTC and SEC.)

Industry Group	First Qtr. 1960 Sales	Change from 1959	First Qtr. 1960 Earnings	Change from 1959	First Qtr. 1960 Profit Ratio
Chemicals and allied products	$6,678	Up 4.6%	$507	Up 2.6%	7.6%
Basic chemicals	3,158	Up 7.7%	280	Up 5.3%	8.9%
Pharmaceuticals	997	Up 11.5%	104	Up 10.6%	10.4%
Pulp, paper and allied products	2,909	Up 6.1%	143	Up 5.1%	4.9%
Petroleum refining and related industries	7,456	Up 2.2%	685	Up 3.5%	9.2%
Rubber and miscellaneous plastic products	2,071	Up 5.1%	79	Up 3.9%	3.8%
Primary nonferrous metals	2,401	Up 6.4%	141	Up 4.4%	5.9%
Stone, clay and glass products	1,826	Down 0.1%	92	Down 7.7%	5.0%
CPI totals	23,341	Up 3.9%	1,647	Up 2.5%	7.1%
All manufacturing corporations, except newspapers	85,699	Up 6.3%	3,991	Up 4.4%	4.7%

areas, chemical companies report that sales are running ahead of last year's rates. Many executives mentioned that shipments for the agricultural and construction industries had lagged for several months because of the cool, rainy spring in most areas. They add that those deferred sales were realized later when good planting weather finally came.

And many chemical companies have been affected by the drop in steel industry operations. This effect, of course, is magnified since first-half steel output is sharply down from last year's booming first half, when steel users were buying avidly because of the anticipated strike. But if the steel mills are as active during the rest of this year as the industry's leaders predict, then total '60 production—and the steel industry's consumption of chemicals—will exceed last year's.

High Operating Rates: One of the more optimistic reports comes from Treasurer Raymond Armor of Diamond Alkali. He notes that his firm's first-quarter sales and earnings were up 9% and 35%, respectively; that the second quarter is similarly shaping up better than last year's second quarter; and that the over-all operating rate for the company is expected to average more than 85% for the year as a whole. (Midyear is usually Diamond's busiest season, he added; right now, the percentage operating rate of the company's plants is "in the high 90s.") Armor says there has been an across-the-board increase in demand for Diamond's products, but virtually no change in prices; thus, the only favorable factor on earnings is the greater economy of operating the plants at close to capacity rates.

A vice-president of another major producer of inorganic chemicals feels that his company's next six months' performance will be close to that of the past six months—which means "a pretty healthy year over-all." Total sales volume in '60 may be up 7-8%; but—as is the case with most other companies—profit margins are going down.

Pushing to Meet Demand: An executive vice-president says his company has just lifted its sights on second-half sales expectations. Demand for components of plastics and plasticizers has continued high; "we can't always satisfy it." Shortage of one raw material has prevented full use of capacity for one principal resin intermediate. Only soft spot for this company: an apparent slackening of activity in pipeline building has caused a drop in sales of special protective coatings.

The president of a large distributor of industrial chemicals came up with some specific figures and an exception to the trend toward lower profit margins. "Our May sales were up 17% over December and 4% over May of last year," he said. "We feel that sales for the last half of this year should be up about 15% from the first half, and profits about 25% better."

An important producer of synthetic fibers says that sales are running about 25% ahead of those six months ago and about equal to the year-ago figure. "Because of reduced prices and a change in product mix, profit margins have not kept pace with increased sales volume. However, both sales and profits have a favorable outlook for the last half of the year."

Short of Expectations: But perhaps the best reflection of the over-all picture comes from one large, diversified chemical company: "Most of our plants were setting production records the first part of this year. We are 18% above last year in sales, and we expect to continue at a higher level. I am not so enthused, since I thought it would be a booming year." But he adds, with the optimism also typical of other companies this year, "We have in-

creased our sales force and will be doing better in the next six months."

Several larger chemical companies confide that their second-quarter sales and earnings will not match last year's record highs. But they feel sure the industry's sales and earnings for 1960 as a whole will be something like 5% higher than last year. In other words, these major companies are quite optimistic concerning July-through-December business.

Another point: these companies feel they are licking the profitability problem. Their first-half margins are down, but programs to boost efficiency and productivity are expected to pay off in the second half.

Quite a few executives admit they have now scaled down their 1960 goals and estimates from their predictions of six months ago. But it's still the consensus that this will be the industry's biggest year in sales volume; and one industry leader — a financial vice-president who had dissented both from last December's over-bullish predictions and from last March's recession jitters — holds that this year's moderate growth rate is "much healthier" than a "super-boom" would have been.

Common Is Preferred

Common stock offerings, rather than bonds, are favored by chemical process companies in the money market this week. One likely reason: in financings recently completed, stock issues have been purchased more eagerly than the bonds.

Popularity of common stock is illustrated by the reception of an offering made late last week by Brush Beryllium Co. and its six major shareholders. The stock readily sold out in one day at the offering price of $42/share. At the end of the day, these shares were quoted at 44½ bid, 45 asked. Proceeds on the 260,000 shares sold by the company will be used mainly for plant expansion.

Similarly, the 200,000 shares of common stock offered by Du Bois Chemicals (Cincinnati) at $13.50/-share also sold out in less than a day. Quotations on the day after the financing: 13⅝ bid, 14 asked. Du Bois, a producer of industrial and commercial cleaning compounds, will use the proceeds to retire the balance of a bank loan and for working capital.

India's Refractory Needs

(*Long tons/year*)

Material	*Annual Capacity*	*Est. Demand End of '66*
Fireclay	520,000	800,000
Silica	70,000	350,000
Basic	44,000	180,000
High alumina	10,000	54,000
Miscellaneous (insulating, etc.)	6,400	7,000
Dead-burnt magnesite	63,320	90,000
Fire-cement and mortar	85,800	139,000
Total	**800,520**	**1,620,000**

Open Door in India

As India's economic planners draw up the final version of their third five-year plan (1961-66) for economic and industrial development, substantial new opportunities for investments by the U.S. chemical process industries are coming to light.

With steel output slated to rise from a total of 6 million tons during the present plan-period to 10 million tons during the five years ending in '66, the government has decided more domestic production of refractories will be needed. It's calling for proposals by U.S. companies for the production of blast-furnace, ladle, silica and basic refractories such as magnesite and chrome-magnesite. The expansion list includes chemically bonded and steel-clad bricks, dead-burnt magnesite, and glass-house refractories (high-alumina type).

Meanwhile officials in the Indian Food Ministry believe there's a good chance that U.S. firms, in partnership with Indian interests, may take over all the fertilizer projects slated for the new plan. Koppers is reported to be completing an agreement with the Birla interests for a nitrogen fertilizer plant with a capacity of 70,000-80,000 tons/year. W. R. Grace's Davison Chemical Division, International Minerals & Chemical, and American Agricultural Chemical Co. are also reported to have shown interest.

Lipsticks Lose a Bout

Fourteen major coal-tar colors for lipsticks—which have been under fire by the Food & Drug Administration the past two years—have been tentatively banned. Either Congressional or industry action may nullify the move soon, however.

Congress will likely have first chance. The color additives bill now moving through Congress can lift the ban, if enacted quickly enough.

This bill would allow FDA to set tolerances for the amount of coal-tar colors that can safely be used in lipstick and other products. The existing statute requires that colorants toxic in any concentration can't be permitted in lipsticks. Thus, after several delays, FDA had to act.

If Congress fails to take action on the new proposal before the 20-day period of objection expires, industry reportedly will take steps to prevent execution of FDA's order, could appeal all the way to the Supreme Court.

Slow Progress: So far, the color additives bill has passed the Senate and has been cleared for vote in the House. While industry opposes the Delaney amendment tacked on by the House (the amendment forbids use of any cancer-causing agent), it's resigned to accepting it so as to get a bill passed. A Senate-House conference committee is expected to accept the Delaney amendment and send the bill to the President for signature.

As far as anyone can tell, the 14 lipstick colors are not affected by the anticancer clause. Testing to date reportedly has turned up no evidence that the coal-tar colors are carcinogenic. Unless more extensive tests on laboratory animals reveal evidence of cancer there are no problems standing in the way of approval, provided that the new additives bill is enacted soon.

Coal-tar colors tentatively delisted: D and C Orange 5, 6, 7 and 17; D and C Red 8, 9, 10, 19, 20, 33 and 37; and D and C Yellow 7, 8 and 9. The FDA commissioner on his own initiative has canceled the delisting of D and C Red 11, 12, and 13 after concluding they were not sufficiently related in chemical structure to the tested D and C Red 10, and has opened additional study on these colors.

Nuclear Projects Threatened by Court Ruling

Project and Owner	*Location*	*Construction Status*
Dresden reactor—Commonwealth Edison Co.	**Morris, Ill.**	Operating at half power; final construction under way.
Indian Point reactor—Consolidated Edison Co. of New York	**Buchanan, N.Y.**	Under construction.
Enrico Fermi reactor—Detroit Edison Co. and Power Reactor Development Co.	**Lagoona Beach, Mich.**	About 60% completed.
Carolinas-Virginia reactor—Nuclear Power Assoc.	**Parr, S.C.**	Construction just started.
Yankee Atomic Electric Co.	**Rowe, Mass.**	Virtually completed; should go critical this summer.
Pathfinder reactor—Northern States Power Co.	**Sioux Falls, S.D.**	Construction just started; to be finished in '62.
Humboldt Bay reactor—Pacific Gas & Electric Co.	**Eureka, Calif.**	Construction to begin this fall.
Big Rock Point reactor—Consumers Power Co.	**Big Rock Point, Mich.**	Construction to start this year.
Peach Bottom reactor—Philadelphia Electric Co. and High Temperature Reactor Development Assoc.	**Peach Bottom, Pa.**	In design stages.

New Woe for Nuclear Plants

The Atomic Energy Commission and the Dept. of Justice this week are attempting to knock down the latest roadblock to nuclear energy development. The roadblock is the U.S. court of appeals' ruling on a nuclear reactor being built near Detroit, and AEC and the Justice Dept. are asking the Supreme Court to reverse that decision.

That ruling—to the effect that the safety of a power reactor must be fully certified by AEC before construction can begin—directly affects only the Detroit plant. But AEC and most industry people believe it poses a direct threat to all nuclear power plants now under way (*CW Washington Newsletter, June 18*).

And it can also be viewed as adding a hindrance to all other projects—aside from power plants—aimed at commercial use of nuclear energy. Process companies in this field already have experienced difficulties with AEC over licensing, inspections and safety precautions, as well as over employee, union and public relations.

The recent court decision and the coming battle before the Supreme Court this fall will tend to increase public and labor unions' anxiety about operations involving use of nuclear materials, and also raise the possibility of law suits aimed at blocking such projects.

This litigation will vitally affect process companies interested in nuclear projects, as will the reaction of various electric power companies to the circuit court decision.

Union Target: Power Reactor Development Co.—whose reactor at Lagoona Beach, Mich., was the target of the labor unions in that case—says it is "continuing with construction," despite the adverse decision. It's understood that this will be permitted as long as the appeal is pending.

Consolidated Edison of New York said last week that it's confident no lawsuit will be filed against its nearly completed Hudson River nuclear plant, which will use conventional equipment.

Chaos in the Congo

Political chaos that could set off explosions throughout Central and West Africa, coupled with rich potential for CPI investors: that's the picture in the Belgian Congo as that colony plunges wildly toward June 30 independence.

About the only certainty as to the Congo's political future at this point is that there's bound to be trouble after Independence Day—the kind of trouble that may wind up destroying the new state before it's born.

Since it suddenly decided six months ago to grant the Congo independence, the Belgian government has been desperately trying to build some sort of political structure in a country that lacks even a single native leader with a college degree and is riven by violent tribal and regional conflicts.

Out of the hastily called elections for a national legislature a few weeks ago, fire-brand Patrice Lumumba, one-time Stanleyville postal clerk, emerged as the politician with the largest backing. But Lumumba's party, the National Congolese Movement (MNC), doesn't have a clear-cut majority.

For U.S. business the chief cause for concern over the Congo is for the future, rather than its present. The Belgians, who have plowed in enormous investments of their own, have jealously kept out other foreign investors. Total U.S. investments come to only about $10-12 million, a good chunk of which is Reynolds Metals' stake in the big Inga power project.

With its mineral wealth (including copper, cobalt, uranium and diamonds) and its rich agricultural potential, the Congo could develop into a strong growth country.

Aside from political stability, and the development of a responsible, educated class of leaders, the Congo's prime need is capital—made more acute by the flight of Belgians' funds. The big question is: Where will it come from? Russia is expected to step forward with big loans, as it has in other new African states—Ghana and Guinea. Lumumba—who may or may not wind up holding the political reins—is not a Communist, but observers easily picture him playing off the East against the West.

COMPANIES

Lockheed Aircraft Corp.'s Burbank, Calif., division has opened its $3-million plastics center for development of new products and ways to make them. One special area of work will be in evaluation of plastics for underwater military use.

•

Phillips Petroleum Co. now owns 1 million common shares (12%) of the outstanding stock of Union Oil Co. (Los Angeles). Phillips says it has purchased the shares solely as an investment, has no intention of merger or consolidation with Union Oil.

•

Aluminium Ltd. (Montreal) has withdrawn its proposal to purchase the assets of Apex Smelting Co. (Chicago) following U.S. Dept. of Justice objection. Aluminium, which has no fabrication facilities in the U.S., had planned last December to purchase the Chicago smelter.

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New Mexico Chemical and Sulphate Co., Inc. (Mena, Ark.), has been formed to mine and refine minerals and metals. Incorporation papers list the firm's authorized stock at $1 million. Operation is planned mainly in New Mexico, with offices in Mena.

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Kawecki Chemical Co. (Boyertown, Pa.) has purchased 50% of the common stock of Penn Rare Metals, Inc. (Revere, Pa.). Kawecki will participate in Penn's management and will be exclusive agent for its alkaline metal products. Henry Kawecki, chairman of Kawecki, is now vice-president of Penn, with Manfred de Rewal remaining as Penn's president. Kawecki's '59 sales were $7.5 million; Penn's predicted '60 sales, close to $1 million. Both companies will continue independent metals research.

EXPANSION

Sulfur Chemicals: Pennsalt Chemicals Corp. (Philadelphia) will spend about $750,000 on another expansion of its organic sulfur chemicals facility in Houston, Tex. The new production unit will utilize part of the expanded hydrogen sulfide capacity installed this spring. The latest unit will produce alkyl mercaptans. Completion is scheduled for early '61.

•

Lime: National Gypsum Co. (Buffalo, N.Y.) is considering Detroit, Chicago and the Lorain-Cleveland area as possible sites for large lime plants to serve the steel industry. The company's present lime sales total about $15 million/year. Also in planning stages: a multimillion-dollar gypsum products plant and mine near Toronto, Ont. Although exact location of the Ontario land tract was not disclosed, the company reportedly has been conducting extensive drilling tests near Brantford, Ont.

Paper: Southwest Forest Industries, Inc. (Los Angeles), will break ground late this month for a $32.5-million newsprint and kraft paper mill on a 640-acre site at Snowflake, Ariz.

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Pharmaceuticals: E. R. Squibb Division of Olin Mathieson Chemical Corp. is building a new shipping, warehousing and regional administrative headquarters building in Seattle, Wash. Estimated cost: $800,000. Completion target: early '61.

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Petroleum Products: Canadian Husky Oil Ltd. will spend $1 million for new construction and alteration of its Fort William, Ont., 4,000-bbls./day refinery to enable the refinery to store and operate on western Canada crude as well as the Saskatchewan medium-gravity crude the plant now uses.

FOREIGN

Petrochemicals/Japan: Toa Nenryo, a subsidiary of Standard Vacuum, has asked government approval of a proposed petrochemical subsidiary. The firm would build a 140,000-tons/year olefins plant at Kawasaki.

•

Nuclear Power/India: The Indian government expects the U.S.S.R. to participate in the design and construction of one of the two 150-megawatt natural uranium power reactors in its new five-year plan.

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Pigments/Australia: Imperial Chemical Industries' Australian subsidiary will build a $3.4-million plant to make pigments for the plastics, paint, printing-ink and allied industries. It will be Australia's first pigment plant.

•

Acrylic Fiber/Yugoslavia: Courtaulds Ltd. has closed a $5.6-million contract with three Yugoslavian enterprises to supply plant and machinery for an acrylic fiber plant.

•

Phosphorus/Yugoslavia: Tovarna Dusika Ruse, a Yugoslavian firm, seeks engineering assistance, equipment, and "general guidance" for construction of a plant to produce 7,000 metric tons/year of elemental phosphorus and 25,000 metric tons/year of phosphoric acid.

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Phosphate, Fertilizer/Lebanon: General Manager Michel Doumet of Lebanon Chemicals Co. (Beirut) seeks capital investment for developing phosphate reserves that reportedly total about 4.6 million tons.

•

Plasticizers/Netherlands: Emery Industries has formed a 50-50 subsidiary with Unilever. The new company, Unilever-Emery NV, will build a plant at Gouda to make vinyl plasticizers, synthetic lubricants for jet engines, and other chemical products.

To make a good shampoo . . . you need CARBIDE'S Ethanolamines

Good detergent action, mild alkalinity, and bland skin action—are three reasons why soaps based on mono-, di- or triethanolamine are used to make fast selling hair shampoos. For example, a good shampoo is made from a coconut oil soap of triethanolamine which combines excellent detergent, lathering, and rinsing properties.

Amine soaps, made with triethanolamine or mono- and triethanolamine, are easily emulsified. Thus, excellent products can be prepared by simplified and less-costly emulsification procedures. Also, soaps based on CARBIDE's ethanolamines are non-corrosive and have excellent storage stability.

You can obtain valuable technical information and suggested formulations for solvent emulsions, "soluble" oils, wax emulsions, and oil and wax polishes by calling your CARBIDE Technical Representative. Or, write Department B, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, New York. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

UNION CARBIDE CHEMICALS COMPANY

UNION CARBIDE

Washington
Newsletter

CHEMICAL WEEK
June 25, 1960

The Air Force proposal to set up liquid oxygen production facilities at missile bases has come under Congressional fire.

The Senate Small Business Subcommittee on business-government relations charged the Air Force competes with private producers, demands that it hold off plans to buy 64 liquid oxygen generators.

The subcommittee says the Air Force plans violate Administration policy to get the government out of competition with private business. It claims the Air Force "made no study of the economic impact of its decision to self-produce oxygen, that the sensible procedure would be . . . to purchase and store its oxygen rather than produce it at a cost substantially higher than it could buy it from the liquid oxygen industry."

The Air Force has made no decision yet on whether to buy the liquid oxygen generators. But the Pentagon has ordered the Memphis Air Depot to hold off any contract awards on bids already received on 70 LOX generators.

Air Force argues that it needs on-base LOX-producing capacity as a readiness measure. It does not want to be tied to privately owned facilities in a crisis. In addition, it wants the facilities to train military personnel in LOX production operations.

Even with the procurement of the 70 generators, the Air Force says, it would need to augment its LOX output by purchases from commercial producers. It estimates that industry would still supply some 50% of LOX requirements.

•

Senator Kefauver wants FDA to be required to declare new drugs "efficacious" as well as safe, and also be required to license drug manufacturers. Those are the key changes that are incorporated in the legislation Kefauver introduced last week amending the Food and Drug Act.

At present the agency can't stop the introduction of a new drug so long as it is found not harmful—i.e., it's not necessary for a new drug to have a "good" effect on the person using it. And the agency has no licensing authority over drug manufacturers; FDA cannot keep a firm out of the drug business by withholding a license, which is the power Kefauver would like the agency to have.

Kefauver says that one purpose of his bill is to make it more difficult for someone to contend successfully that there is a difference between two different brands of the same drug.

Chances for adoption of any such proposal at this session of Congress are nil. The guess is that next year pressure for such legislation will not likely be noticeably greater, unless some unexpected turn of events

—a drug scandal, for instance—should put the heat on the lawmakers.

•

FDA Commissioner George P. Larrick appears to be weathering the storm caused by the Kefauver investigating committee's disclosure that one of his top aides, antibiotics chief Henry Welch, made $287,000 in side income in eight years. Welch got the extra money through his financial interest in medical journals, which carried drug advertising.

Health, Education & Welfare Secy. Arthur S. Flemming gives no indication that he intends to ask for Larrick's resignation. Actually he regards Larrick as an able public official and feels he was caught in a situation he could legitimately have known nothing about.

Larrick still is not home safe, however. Flemming has initiated an investigation into charges made by an ex-FDA official before the committee that FDA has been "too cozy" with the industries it regulates, and he has also begun a probe into the decisions made by Welch in the drug field. If the investigators should turn up evidence of other questionable practices, Larrick and other top officials could be in a hot spot.

Chief investigator is Charles H. Kendall, general counsel of the Office of Civil and Defense Mobilization of which Flemming was formerly director. Assisting will be Dr. Charles A. Doan, dean of the Ohio State University Medical School, and William A. Costello, inspector for the Internal Revenue Service.

•

A new study on development of the energy resources of the U.S. has been ordered by Rep. Wright Patman (D., Tex.). Patman's subcommittee on Automation and Energy Resources of the Joint Economic Committee has put a whole string of questions to a number of federal and state agencies.

What Patman wants is a complete statement of each agency's policies, activities, purposes. He's asking such questions as what are the agency's objectives, its rules and regulations, policy declarations, conflicts with other agencies, the most challenging issue before it. And he's seeking recommendations to improve the federal government's role in the field.

Patman thinks of his new project as an update of the so-called Paley Report on resources, published back in '52. He may hold hearings later this year when all the material is collected, but more likely will publish a staff report based on the new data.

•

Lead-zinc supports will be debated on the House floor. The House Rules Committee last week reversed two earlier votes, and cleared the way for a vote on a plan sponsored by Rep. Ed Edmondson (D., Okla.). It would subsidize small domestic mines producing up to 2,000 tons/year of each metal by propping their prices at 17¢/lb. on lead, 14½¢ on zinc. The bill still has a long road to final enactment.

ADVERTISEMENT—*This entire page is a paid advertisement* *Prepared by U. S. Industrial Chemicals Co.*

U.S.I. CHEMICAL NEWS

June 25 ★ A Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1960

Sodium Dispersions Now Sold by Several Companies

Many types of sodium dispersions are now being sold commercially by several companies. These firms already prepare sodium dispersions for their own chemical manufacturing operations, and so are familiar with the techniques involved.

Sodium dispersions, of course, have been recommended for many years for their high surface area and, consequently, high activity in reactions such as Claisen condensations, Wurtz type reactions, sodium alcoholate preparations, metalations, preparations of sodium alkyls and aryls, polymerizations and many others. Until dispersions were offered for sale commercially, however, they had to be made by the user in situ as required. Some special equipment and operator training are needed for dispersion preparation, and it is believed that these needs may have discouraged use of dispersions on a broader scale in the past, especially where small quantities were involved. The availability of commercial dispersions now is expected to increase their use in chemical reactions.

One supplier offers two standard types of sodium dispersions. The first is a solid composed of 50% sodium and 50% paraf-

MORE

Chemistry Booklet for The Elementary School Teacher Supplied by MCA

"Matter, Energy and Change", a booklet containing a course of study in chemistry for elementary school children, is being offered to school supervisors and teachers at below-cost prices, as an educational service of the Manufacturing Chemists' Association.

The 50-page booklet attempts to supply up-to-date knowledge to the science educator in the rapidly growing and changing field of chemistry. It presents this knowledge by outlining a series of explorations for the children. For youngsters through third grade, there are explorations into materials, changes, water, air and plants. For older children through sixth grade, there are explorations into the nature of matter, chemical reactions, electricity and matter, chemical tests, crystals and photography.

This booklet represents a part of MCA's extensive aid-to-education activities, designed to stimulate the understanding of chemistry at many levels.

Up-To-Date Catalog On Ethyl Alcohol Now Available from U.S.I.

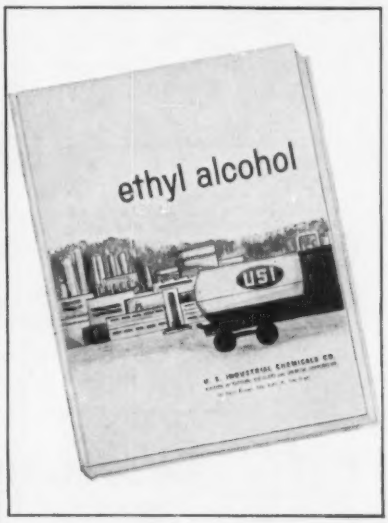
132-Page Book Contains Complete Information on Pure Ethyl Alcohol and Denatured Alcohol Formulations

U.S.I.'s new Ethyl Alcohol catalog has just been published. Type style and format of the up-to-date edition have been carefully selected for easy reading. Comprehensive and thoroughly documented, this illustrated catalog covers:

(1) Pure ethyl alcohol—properties, specifications, shipping data.
(2) Specially denatured alcohol formulas—authorized denaturants, compositions and uses; properties; shipping data.
(3) Completely denatured alcohol formulas—authorized compositions, specifications, properties, shipping data.
(4) Proprietary solvents: SOLOX®, FILMEX® and ANSOLS®—authorized compositions, uses, specifications, properties, shipping data.

In addition, there is a section on the general properties of ethyl alcohol, including graphs, tables and bibliography, and a section on methods of testing. Appendices include standards, tests and assays of the ACS, NF and USP; container descriptions; gauging techniques for drums, tanktrucks and tankcars; and methods of handling. A glossary of terms completes the volume. Sections are tabbed for quick

MORE



U.S.I.'s new Ethyl Alcohol catalog.

Complete Property Data On Pure Nitric Acid Published Recently

The most current and accurate information available on the physicochemical properties of pure nitric acid has been collected, evaluated and presented in a 23-page report in the April issue of *Chemical Reviews*, a bimonthly publication of the American Chemical Society. The report includes discussions and data on: various methods of preparing nitric acid; all physical properties; self-ionization; thermodynamic properties; stability. It concludes with a list of the 216 references the authors used in compiling their data.

This collected information should be of particular value to laboratory, design and theoretical workers. It should also be useful to those engaged in the production, handling and storage of highly concentrated solutions of nitric acid for rocket fuel applications, as well as industrial producers and users of the material in any concentration.

Polyethylene Pipe and Fittings Joined by Fast Heat Sealing Technique

A patented process has been reported for joining polyethlene pipe and fittings, using nothing but heat and a special tool of simple design. In the process, called "Polyfusion", the outside of the pipe and inside of the fitting are heated on the Polyfusion tool and joined together to form one homogeneous piece. Any conventional heat source—flame or electric—can be used. No glue, cement, solvent or other material is needed. It is reported that only 10 to 20 seconds are required to fuse a joint.

CONTINUED

Alcohol Catalog

reference and each section has a table of contents.

A 20-page Government Regulations supplement is contained in a pocket inside the back cover, so that it can be easily replaced when changes are made in federal regulations. You can obtain a copy by making a request on your company's letterhead.

CONTINUED

Sodium Dispersions

fin or naphthalene binder, shaped into one-pound bricks. The other is a liquid made up of 50% sodium and 50% mineral oil. The company also offers other liquid dispersions as required.

A second company is marketing a crushed solids dispersion containing 50% sodium and 50% napthalene, as well as a dispersion gel consisting of 50% sodium and 2% aluminum stearate in mineral oil.

Still another company supplies four standard types of dispersions: 30% sodium and 50% sodium in xylene, and 30% sodium and 50% sodium in special naphtha cuts. They will also supply mineral oil dispersions on request.

New Microporous Films of Polyethylene Repel Water But Transmit Vapors

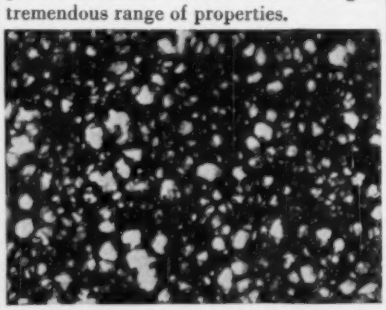
It is reported that a technique has been developed for producing extremely fine, uniform, interconnecting pores in polyethylene films. This makes the plastic vapor-transmitting and water-repellent at the same time. Films so prepared are being investigated for use in clothing, filters, medical equipment, solar water purification apparatus, electrodialysis equipment and other specialty applications.

As normally produced, these polyethylene films are said to have a porosity of about 80%, with all pores in the 8-12 micron range. Because of this extremely high void volume and the interconnecting structure, gases and vapors can diffuse through the films with very little interference. But because the polyethylene itself is hydrophobic, surface tension prevents water or aqueous liquids from penetrating the extremely fine pores. In this way, the material transmits water vapor but is completely water-repellent.

The pore structure is reportedly achieved through the use of starch as a leachable material. Polyethylene resin and starch are mixed, and the mixture is converted to sheet by any of the conventional methods such as calendering or extrusion. At this stage the starch in the sheet is encapsulated in very thin walls of polyethylene.

Next the sheet is immersed in boiling water to wet and expand the starch. Cornstarch, for example, will swell to well over twice its original volume. The expansion ruptures the plastic walls encapsulating the starch and results in the interconnecting pore structure. Starch is then removed by sulfuric acid hydrolysis and leaching.

It is claimed that by selecting starches of different particle sizes, altering the basic process, and varying the plastic formulation, a great variety of microporous plastic materials can be made having a tremendous range of properties.



Photomicrograph (200 magnification) shows typical pore structure of microporous polyethylene film. (Courtesy ESB—Reeves Corp.)

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

Polyethylene in powder form, a new development for coating metals, textiles, paper, glass, etc., for molding and other purposes, is described in technical data bulletin now available. Said to open new uses for polyethylene. **No. 1600**

Etching solution now on market makes fluorocarbon polymers bondable to other materials. Material is activated form of sodium in solvent. Extracts fluorine from surface, leaves carbonaceous film compatible with adhesives. **No. 1601**

Health factors in safe handling of chemicals is subject of first in series of pamphlets on safety, to be sold at nominal cost by MCA. Pamphlet is designed to acquaint non-chemists in chemical plants with toxicological terms, toxicity mechanisms, first aid principles. **No. 1602**

New portable conductivity and temperature measuring Solu Bridge for measuring tidal movements, salinity, industrial pollution, etc. is now on market. Covers, in 3 ranges, 40-400,000 micromhos/CM specific conductance. **No. 1603**

Portable water softener recently developed works by electric membrane process, is claimed 500 times more efficient than comparable electrical devices. Said to soften 2 gallons of hard water per hour on 10 watts of electricity. **No. 1604**

Coagulant aids, described in new bulletin, are used in municipal and industrial water systems, waste waters, cold and hot process softening, oil field waterflooding, brine clarification, color removal, high solids-liquid separation. **No. 1605**

New miniature infrared photoelectric scanner (proximity sensor) contains both light source and pick-up head in one small housing. Simplifies installation and operation in many counting and control applications. **No. 1606**

New dispersants and inhibitors have been developed to prevent formation of sludge in fuel oils. Dispersants are dialkyl dimethyl ammonium chlorides. Series of 14 fatty amine derivatives comprise the group of inhibitors. **No. 1607**

Chemical fume scrubbers of fiberglass-reinforced polyester resin now being designed. Units up to 47 feet high by 10 feet in diameter have been made. Plastic chosen for strength, lightness, chemical and flame resistance. **No. 1608**

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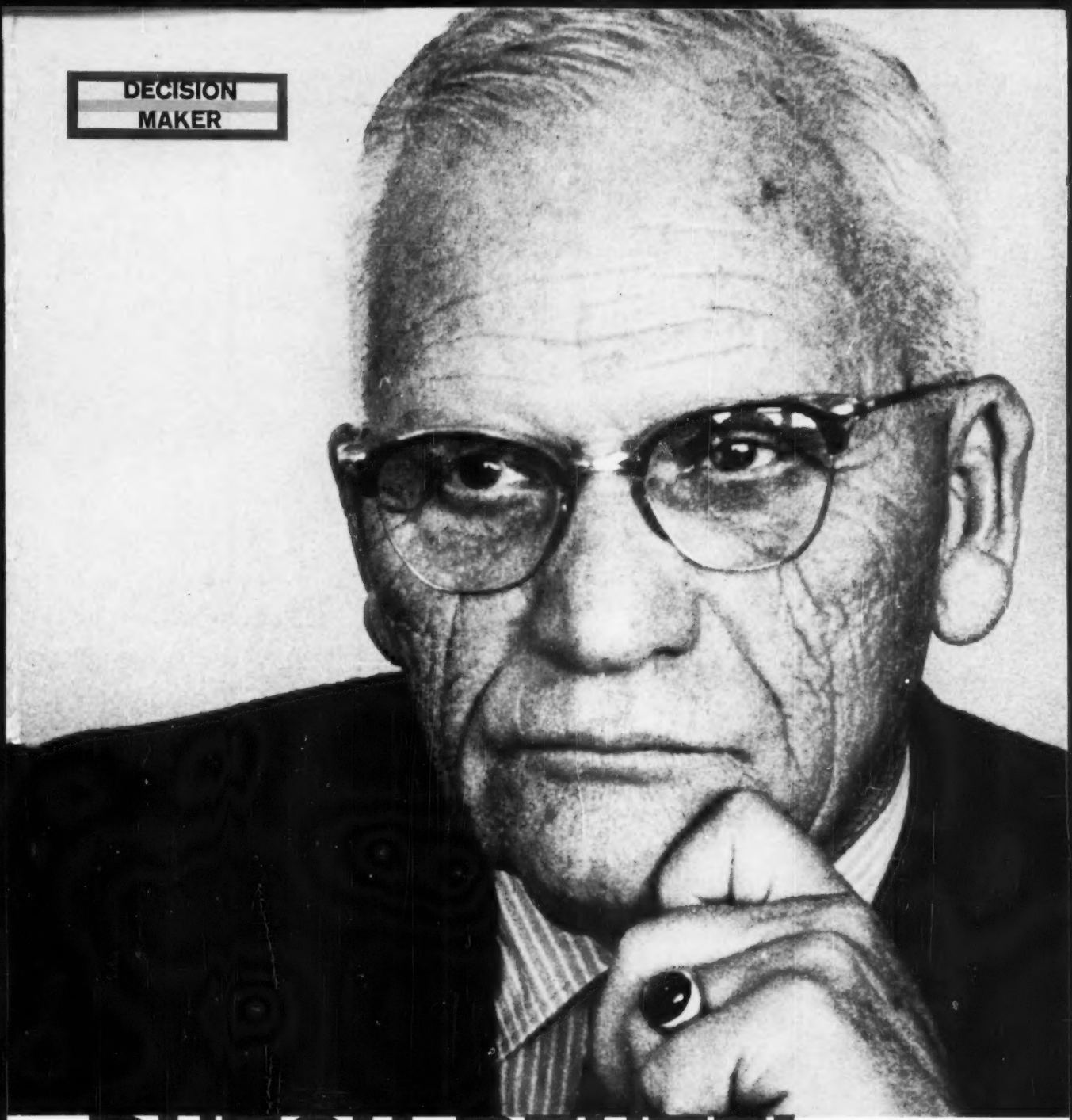


PHOTOS BY RUSSELL LEE

DUTCH BEUTEL

The pioneer in the Texas Gulf Coast CPI is A. P. "Dutch" Beutel, general manager of Dow's Texas Division.

DECISION MAKER

It's hard to pin just one identification tag on Albert Phillip "Dutch" Beutel. The white-haired, rugged-featured Beutel (pronounced Boy'tle) is general manager of the immense Dow Texas Division, into which Dow has poured some $500 million. But he's also a director of the Dow Chemical Co., head of the Dow Mexican enterprises, boss of the fast-growing Dow Louisiana Division, the Dowell and Brazos Oil and Gas divisions, and Dow's Gulf Coast Engineering Consultants. He's an officer in a variety of civic and business-related projects, an accomplished ceramist, photographer, gem worker and rancher. But most of all, Dutch Beutel is the pioneering personality of the chemical industry in the U. S. Southwest.

It's little exaggeration to say Beutel is the Dow Texas Division. He has built the vast, 1,500-acre complex into a producer of 50-odd chemicals—and nearly half the entire Dow complex's tonnage output. He has given it a stature seldom attained by a corporate segment. And he has similarly made it, in terms of investment, the largest chemical plant in CPI-rich Gulf Coast Texas, where there is an estimated $3 billion worth of chemical industry.

The major portion of Dow's expansion in the last 15 years, in fact, has been in the Southwest. And much of this has been because Beutel has been championing the region. But he has done more than convince Dow's board that the Gulf Coast is the place for new projects. He has "sold" the influential people of the Southwest on the value and potentials of the chemical industry, paved the way for other chemical companies' moves to the area, and helped initiate the region's fabulous growth as a chemical processing center.

Beutel has done this by a sweeping interpretation of management's job in building a plant and an industry—and he has been very lucky in the circumstances surrounding his moves.

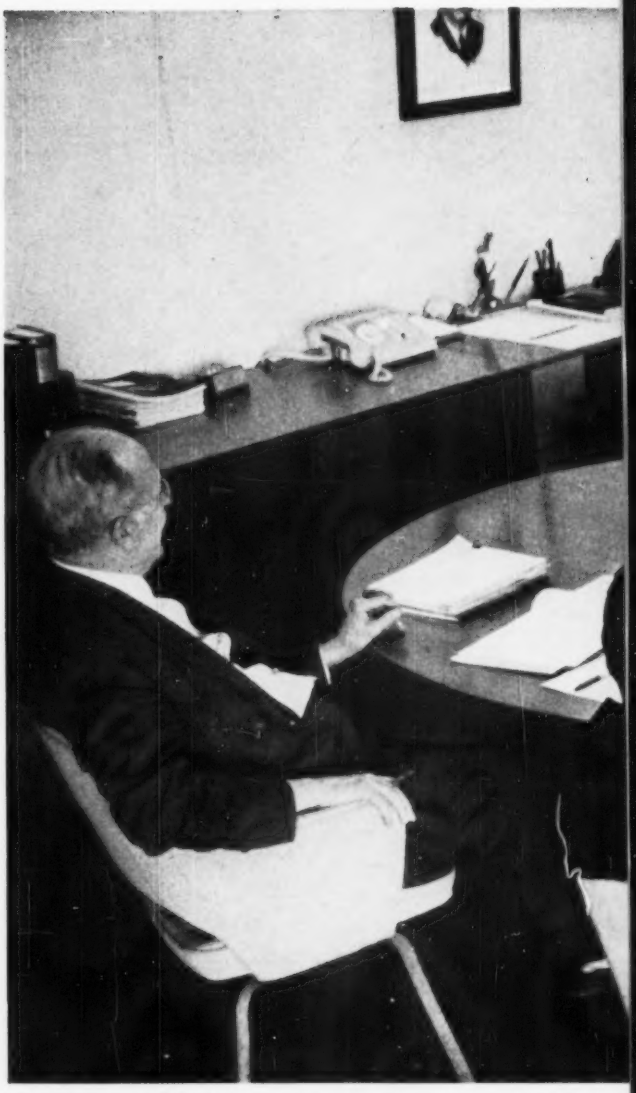
Timing helped: Dow moved into Texas in March '40,* with the impatient encouragement of a rapidly arming government. The plant was to make magnesium, chloride and caustic, and war industries' need for these assured Beutel aid in his efforts to cut through the red tape of plant construction.

Locale helped: the Freeport, Tex., area was desperately eager for industry, with a dwindling sulfur business and shrimp fishing about its only industries. Land —"salt grass"—was easily obtainable.

Geography helped: the Brazos River provided a bounteous supply of fresh water, and ocean port facilities for the making.

Natural resources helped: there was an abundance of low-priced natural gas, LPG, magnesium-rich sea water, calcium-rich oyster shells, sulfur, salt domes.

* Columbia-Southern is regarded as the first of the modern generation of chemical producers on the Texas Gulf Coast—aside from the sulfur producers.



The Texas Division's executive board meets weekly in

But to regard such factors as lucky finds is to sell Dow's planning short; it was looking for those things. And Beutel was quick to turn them to advantage. Item: Dow was able to buy land freely—it now owns about 19,500 acres, at least 13 times the acreage occupied by its plants. Item: It was able to get natural gas from customer-hungry producers for 1¢-2½¢/-1,000-cu. ft. rates. Item: It managed to build on its own land two giant reservoirs that assure it, even in arid Texas, process water for almost any type of new facility.

A postwar result was that Dow was able to plunge into petrochemicals to an extent that made the wartime magnesium plant look almost trifling. Over the years since '45, the company has spent an estimated $400 million on the two plants—Plant A, first-built, and directly on the coast; and Plant B, some seven miles inland—that make up the Texas Division complex.

Beutel's office around big, free-form desk. Sessions are primarily concerned with broad policy matters.

And all this has been done in a way that has won for Dow in Texas the reputation of being a far-sighted and responsible company to work for. For Beutel it has resulted in genuine community regard and respect that is exemplified by the building of A. P. Beutel elementary school in the Dow-sponsored community of Lake Jackson.

GULF COAST PROSPECTOR

Dow's interest in an iodine plant in Louisiana—the Jones plant—first sent Beutel to the Gulf in the late '20s. He explored the area further during the '30s, when Dow stepped into the oil well acidizing business (Dowell, Inc.) to help sell its excess hydrochloric acid. Thus, when Dow decided to expand its magnesium production, Beutel was in a position to interest the company in the Gulf Coast. And the Dow company (then headed by Beutel's close personal friend, Willard Dow)—with its policy of allowing its division heads great latitude—let him take full advantage of raw-materials opportunities in building the plant (as much as wartime conditions permitted).

It is, of course, unfair to the many others who contributed immensely to the Freeport plants' development to credit it all to Beutel—he himself doesn't. For one thing, he is not a process originator or designer; foresightedness regarding raw materials and plant layout are more his forte. But he found plenty of help from staffers such as George McGranahan, E. O. Barstow, Ivan Oden, C. M. Shigley, Walter Roush, Nelson Griswold, George Greene, Henry Roebke, Harland Sherbrook, and John R. (Jack) Stein. And there was, "most decidedly," says Beutel, "the backing of a knowledgeable board and a keen corporate organization."

There is no question, however, that Beutel is a builder. Dow President Leland Doan, in fact, says the not-too-distant Louisiana Division bears the Beutel stamp even more than does the Texas Division. "He

seemed to feel it would be his last chance to put up a plant in the way he likes," says Doan, again not diminishing the help given by others on the Dow staffs.

Beating the Schedule: What characterizes a Beutel-built plant? For one thing, "he finishes it ahead of schedule," says Doan. One of Beutel's first jobs was the building of an iodine plant in California. Admittedly a small unit, this was put up in Torrance, Calif., in '28, in less than 30 days—22 working days.

Avowedly a red-tape cutter, Beutel nonetheless worries about charges that he "rams things through." "Some people objected to the way we moved in down here in Freeport," he says, "and bought up all this property and got equipment during the war. But we never did anything out of line."

And if Beutel cuts red tape, he doesn't cut corners when it comes to his plants. Beutel likes to space out his units—hence the extensive acreage of the two Freeport plants. He also likes neat, geometrical layout (*CW, April 9, p. 45*). Beutel was perhaps first at Dow to follow the suggestion of Alden Dow, architect son of the chemical company's founder, that the plants be painted colorfully. They are white where sun heating is to be avoided, mainly red and green elsewhere (the paints are based on Dow products). Color coding is not practiced—"it's too expensive," says Beutel.

The plants are well tended, and well lighted. At night Plant B glows like Manhattan seen from the Jersey Palisades. Beutel uses more lighting than do most of Dow's other divisions. He feels that safety in around-the-clock operations requires it.

The neatness of the plants reflects Beutel's liking for good housekeeping. "It burns me up to see closet doors left open," he growls at the sight of an open supply room in the hall of his administration building.

He dislikes sloppy people, sloppy habits. Such things bring the Beutel temper out. "When he plants his feet wide apart, and sticks his hands in his hip pockets, you better look out," warns a long-time chauffeur for Dutch.

But he is known for more than a penchant for orderliness. "Aggressive, seldom fails to get what he wants," says one of his assistant general managers; "tough as whitleather†," snaps a Houston business associate; "fair-minded," says a union officer. There seems to be plenty of justification for all the terms.

"Dutch was always an aggressive guy who knew where he was headed," recalls a brother, still in the hometown of Cleveland. Beutel, oldest of four boys, says he "told the others what to do—until they were big enough to whip me." Born in a comfortable residential neighborhood on what was then the edge of Cleveland, Beutel learned to speak German before he did English. His fluency in German has helped in dealing with the German chemical companies—the Texas Division is the home of the new Dow Badische acrylic units.

Despite his short stature and a slight limp caused by a birth injury to his left leg, he was known through school and college as a dynamic, dominant personality. "He wasn't exactly what you might call a socially minded person," recalls a fellow student in Beutel's class of '14 at Case Institute,‡ "but I do remember him rolling a barrel of beer down one of our quiet streets late one night."

Beutel has taken care to bolster his social awareness in the days since, and is now thoroughly at home in small groups. But only a few weeks ago, he twice mentioned in a brief conversation how he would like to be a more accomplished platform speaker.

HIGH COMMAND

Whether or not he is completely comfortable before crowds, he generally gets through to them, and he has won the respect of virtually all the 5,500 employees at the Texas Division. This is apparent even in the attitude of labor, which has given the Texas Division some bad moments. Said a spokesman for the operating engineers, who struck for 21 days in '46: "I don't think the picket line would have been thrown up if we had dealt directly with Beutel."

And says Leland Wilkins, of the electricians group that caused a '55 work stoppage of 19 days: "Soon as we got to talk with Dr. Beutel, we settled right away."

Nothing but the Best: The fact that unions—there are 10 of them in the Texas Division—don't deal more directly with Beutel is the source of several of their complaints (they have the right in disputes to make a final appeal for his intervention before grievances go to arbitration). As is often the case where a strong man runs an organization, those who must deal with his subordinates feel they've been shortchanged.

To a considerable extent, labor's respect for Beutel extends to his executive team and assistant managers. Not all middle management, however, enjoys the same regard. "The supervisors [on salary] seem to feel their first duty is to agitate labor," say the operating engineers. This hardly jibes with the Texas Division's outstanding production record, but Freeport has lost more time through strikes than has any of the other Dow divisions—74 days in 20 years.

Labor makes another charge regarding the Texas setup: plant supervisors ("they're too cost conscious") often overrule the safety department, "because Beutel hasn't given it any authority."

This is a charge that disturbs Beutel considerably. Few Dow supervisors can be ignorant of Beutel's real concern with plant safety—he chairmans the monthly

† Whitleather, or whiteleather, is leather toughened in alum.

‡ Beutel received an honorary doctorate from Case in 1942.

Beutel maintains a brisk daily pace

1

2

3

4

1 He's in the office early to handle mail. Secretary is Margaret Ann Key.

2 Keeping tabs on Dow's southwestern operations keeps him on the phone a lot.

3 Lunchtime brings little letup. Associates are welcomed at his big table.

4 There's a place for him to work, too, on the company's new turboprop plane.

meetings of the division's Executive Safety Council. But this group, which conducts exhaustive investigations of accidents and near misses, orders corrective and preventive measures, and plans safety campaigns, apparently still hasn't the stature the unions want it to have.

In any case the division's record is not bad: in '59, it had an accident frequency rate of 2.48, compared with the chemical industry rate of 3.38. The Texas Division until recently stood in fifth place (of 10) in Dow's company-wide safety improvement contest, until a fatal accident (April 26) automatically eliminated it from the running.

Incidentally, union heads feel that Beutel is taking increasing interest in labor relations: "He didn't give a damn about us in '46," says one, "but I think he does, now."

Trimming the Fat: Labor wryly recalls the recession days of '57-'58, when the 6,800-man staff of the division was trimmed to 4,950. The unions blame Beutel for permitting such overstaffing. This blame Beutel accepts, and he's taking particular care—as are all Dow plant managers, who were similarly affected then—to see that it doesn't happen again.

The staff trimming was painful at salaried levels, too. And one outgrowth of that discouraging blow to management aspirants was a "ten commandments" policy for administration, promulgated in late '59. The result of a study made after business had picked up, it was designed to guide executive operation and to help "the younger technical people . . . receive opportunities for greater authority and responsibility." The 10 rules are not particularly startling (sample: Rule 3—All divisional functions and jobs will be continually reviewed by the executive board to determine if they are still essential to one or more of the three main lines of endeavor. Employees performing services that are no longer essential will be shifted into work that is more essential). But they attempt to express how executive decisions are made.

DAY BY DAY DECISIONS

The Texas Division has four assistant general managers, Luther Evans, Nelson Griswold, Henry Roebke, Walter Roush. These men—and Earle Barnes, Beutel's executive assistant—have specific managerial assignments—responsibility for a particular group of products, or a particular operation of the Texas Division.

The assistant managers, with Beutel, C. M. Shigley (technical research director), Barnes (organic research director), Jerry Faubion (planning and distribution manager) and David Landsborough (comptroller), make up an executive board. It's concerned with broad policy and managerial matters.

Day-to-day operations are coordinated by the operating board, headed by Faubion, which has 16 members representing the various production and plant service groups.

Beutel is chairman of the executive board, but he attends the operating board sessions only when he has some specific matter to bring up.

Another important—but wholly informal—part of Beutel's management procedure comes at lunchtime. Then Beutel goes to the division's handsome new cafeteria, sweats out the chow line, and heads for his special table, in the northwest corner of the building. It's a big table, with a dozen chairs. The only one that's reserved is the one for Beutel; virtually anyone else who has a particular need to see him can sit down with him. For obvious reasons, it's generally the executive team that does join him.

Under this setup, the Texas Division has very high morale. It likes to feel that other Dow divisions are jealous of it because it has "walked off with the cream of things."

Beutel feels, however, that any Texas Division "cream" has resulted from intelligent use of the unique combination of raw materials and facilities available to Dow in the Gulf Coast. "Serendipity and synergism" is a phrase he frequently uses to explain the division's good fortune.

Local Staffing: Beutel also feels that part of the division's good luck is reflected in his staff—a group that outside observers generally agree is top notch.

Several of the key management positions in the division are now filled by men from the Southwest—e.g., Barnes, Faubion and Raymond Fields, general counsel (Texas Division). The majority of those working up the executive ladder are also Southwesterners. It is the policy of Dow Chemical in general to concentrate on getting staffers from nearby areas.

Others—including Assistant General Managers Roush and Griswold, and Controller Landsborough—have come from the Midland offices, Griswold by way of Dowell. Still others, including Technical Research Director Shigley and Assistant General Managers Roebke and Evans, joined the Texas Division after a stint both at Midland and the Ethyl-Dow operations at Wilmington, N.C., and Freeport.

Virtually all these people are technically trained, rather than business trained. Beutel himself studied to be a mining engineer. Again, this particular pattern for the division's management isn't unusual for Dow. As Leland Doan points out, over half of the various division managers are engineers.

This is understandable in an organization such as Dow, where many of the divisions—and this is true for the Texas Division—are production (and in some

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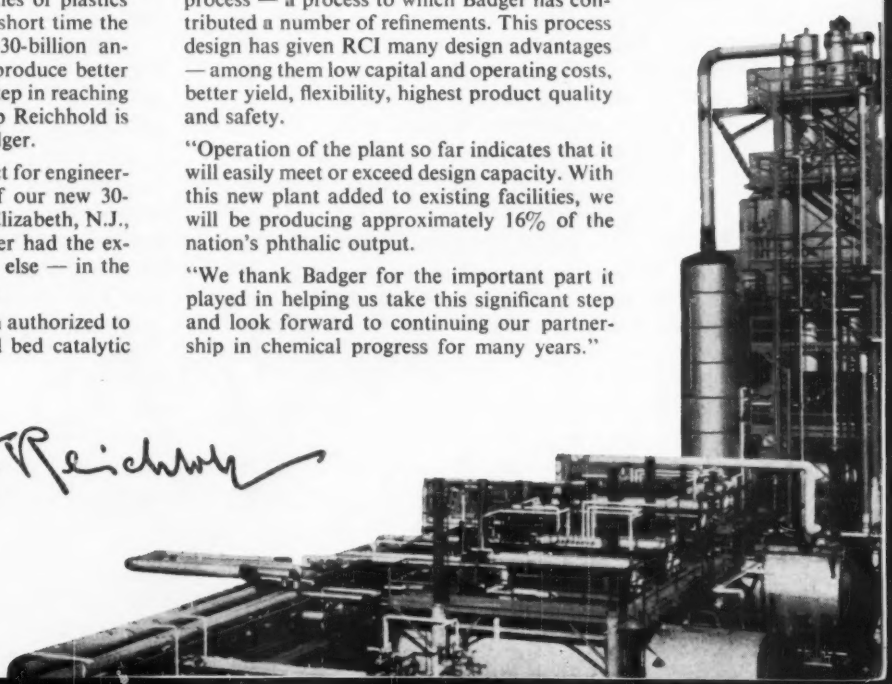
"Operation of the plant so far indicates that it will easily meet or exceed design capacity. With this new plant added to existing facilities, we will be producing approximately 16% of the nation's phthalic output.

"We thank Badger for the important part it played in helping us take this significant step and look forward to continuing our partnership in chemical progress for many years."

Henry W. Reichhold



instances, research) operations and have no sales staffs. They manufacture only for sales orders from the Midland-based sales office. There is, of course, "sales" to other divisions, largely a bookkeeping matter devised to keep tabs on each segment's operating economics.

Sales is, in fact, about the only phase of the Dow operation that Beutel, in his 44 years with Dow, has not tackled. But, in the words of Planning and Distribution Manager Jerry Faubion, "Beutel's sales liaison is excellent."

Patron of Research: His relationship with research, too, is good. "He 'communicates' with research . . . is receptive to new proposals," says a Freeport executive. These words are echoed by R. H. Boundy, Dow vice-president in Midland, and over-all director of the company's research.

Dow has no centralized research labs. Boundy—he has the job of coordinating the research of four divisions—says this has been considered several times but has always been ruled out. Now, he says, Midland does about half the company's research; the Texas Division, 20-25%.

Some of the major areas of recent Texas research concern synthetic glycerin, acetylene, polyurethanes and epoxies. And products in these categories are significant now in the division's production schemes, mirroring some of the important changes the division has made in its 20 years of existence. The one-time magnesium production center of the U. S. is now only partially operating; instead, petrochemicals make up about 80% of current output.

COUNTERING THE COST SPIRAL

Some of the most significant changes have concerned operating costs. Natural gas, a fuel once wasted, has become an expensive — 15-20¢/1,000 cu.ft. — item. Beutel, foreseeing this, urged Dow into natural gas production, and the Dow Division, Brazos Oil and Gas Co. (currently managed by Beutel's youngest son, Richard*), was created for just that purpose. Brazos, a small independent without refinery operations, can supply some 60% of the total division needs.

Water isn't too much of a problem to Dow, because the Texas Division is near one of the major Texas rivers and because it has extensive reservoirs. But taxes have become a thorn. As the largest and one of the few industries in Brazoria County, Dow is saddled with some 40 or more taxes—its bill is about $4 million/-year. And there is prospect for still more taxes (*CW, Dec. 26, '59, p. 21*).

In an effort to halt the spiraling levies, Beutel made what other industry people regard as one of his shrewdest moves. He added Jimmy Phillips, a very popular ex-state senator, to the division legal staff, in hopes that Phillips can present industry's side of the tax question more effectively.

Wages, too, have caused problems. The Texas Division is paying 6.3% higher wages than the next highest Dow location. Beutel has hinted, in fact, that high wages at Freeport were one of the major considerations speeding the establishment of the Louisiana Division in '56. Primarily, he says, the complex was built at Plaquemine to give Dow a "backstop" for almost everything it turns out at the Freeport plant, should there be a shutdown due to weather, disaster—or strikes.

MANY JOBS

Worries about the Texas Division are not Beutel's only concern. He is a vice-president and director of Dow, and he oversees the Louisiana Division, managed by Jack Stein. He is also president of Dowell (serving the oil industry and chemical industry in this country, Canada, Latin America and Europe) and of Brazos Oil and Gas Co. Also under his wing comes Dow's Gulf Coast Engineering Consultants, which from Houston offices does "overflow" engineering for Texas, Louisiana and other Dow installations.

For these many duties, Dow pays Dutch Beutel about $120,000/year, with about another $25,000 going to him in dividends from his Dow stock.

And Beutel has more business and professional chores. He's a director of the Texas Chemical Council, a director of the Texas Research League, a counselor of the Texas A&M Research Foundation, a director of the Junior Achievement of Brazosport, a director of First City National Bank of Houston, a fellow of the American Society of Mechanical Engineers, a member of the advisory committee of the University of Texas Executive Development Program, a member of Rice Institute Associates.

"Still, he has slowed down a lot," says son Dick. This is easier to show in a personal sense than a business one: Beutel used to smoke three to four packs of cigarettes a day, quit entirely a few years ago.

Beutel at 67 maintains a vigorous daily pace. He frequently arrives in his black '58 Impala two-door sedan† before the plant's 7:30 a.m. starting hour, says secretary Margaret Ann Key. One objective is to get at the voluminous mail that "he always answers himself." Mrs. Key, a pretty brunette, is Beutel's 13th secretary since the Freeport plants were begun.

Readily accessible throughout the day—provided meetings don't tie him up—Beutel rarely closes his office door. The office is a giant one, the main part of which is roughly 32 x 24 ft., and parquet floored. On the third (top) floor of the division's new administration building, the office overlooks the Freeport complex's

* An older son, Phillip, is with Aerojet-General in California; Beutel's daughter Betty is married and is living in Hopkins, Minn., near Minneapolis.

† At home is a new Chrysler.

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DECISION MAKER

Snapshots record early phases of Beutel's career

1915 Shortly after leaving college, Beutel went to Robert Gage Coal Co. as a mining engineer.

1942 In Texas, he often rode horseback. He's shown with Willard Dow then Dow president.

1944 Returning to Midland for a special dinner, Beutel and wife sat with Leland Doan (right).

Plant B, through north-facing 10-ft.-high windows.

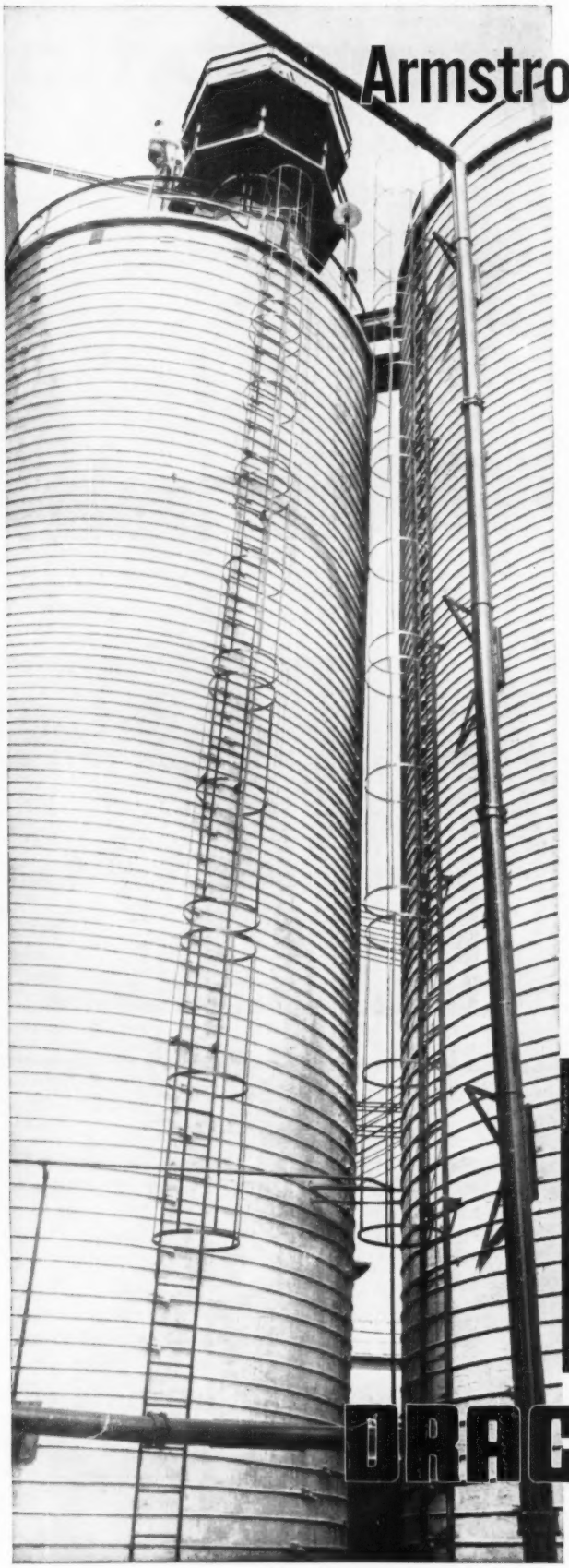
The office's most striking feature is a huge, free form, tan table on the right side as one enters. This table will easily seat a dozen or more, and often does, when Beutel calls in his operating staffs. When he's on the telephone, Beutel swivels around to a desk that is part of a broad, cabinet-bookcase-desk arrangement along the entire east wall.

Should Beutel want privacy during meetings, he can go to a separate study off the northwest corner of his main office. In this room, about 14 x 20 ft., are his desk and bookcases and chairs for seven. Off it is a bath-dressing room, complete with shower. The study also has a door leading to the executive board room.

The handsome, white brick administration building was finished just before the '57-'58 recession set Dow back on its heels.

MAN OF MANY INTERESTS

In spite of his many business responsibilities, Beutel has found time for numerous personal interests. He's an active grandfather—he gets to see the four children of son Dick (in Houston) often, and the four of daughter Betty and the two of son Phil with fair frequency. He's a photographer—both still and 16-mm. movies; a metal worker—silver, copper, pewter; and a ceramist. One of his primary outside interests is gems—hunting them, polishing them, mounting them. He



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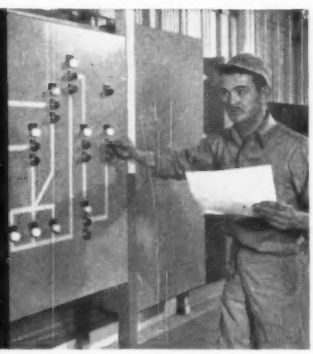

(left) Efficiency is raised here — Airstream Conveyor unloads material from boxcars to storage. Integrated system also moves material to process and permits use of gravity-flow techniques.

(right) Bulk handling by remote control is advanced feature of ultra-modern plant. Airstream Conveyors adapt readily to automated processes.

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Photographs by the Armstrong Cork Co.

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Please note we said, "products and services." For it's our firm belief that chemical raw materials cannot be properly used—and solutions reached—without the services of thoroughly trained sales representatives and a corps of technicians continually at work in sales service, development and research laboratories.

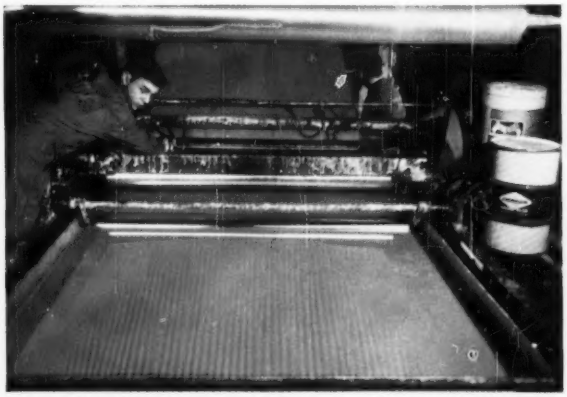
Stop for a moment and consider where you may be able to use to advantage one of the products described here. Perhaps

Lots of good things come from

GOOD

LIQUIDATION

with Goodyear resins or latices)



PAPER PROFITS BECOME A REALITY, when the base stock is saturated with a combination of CHEMIGUM and PLIOLITE latices. Much greater toughness and internal strength plus unusual flexibility and tear resistance result, giving the manufacturer a top-quality paper tape.

SETTING THE PACE IN FASTNESS is no problem when textile printing inks are modified with CHEMIGUM LATEX. Added to resin-bonded pigments, the latex helps form a protective coating which locks in the pigment particles, greatly improving fastness to crocking, or abrasion.

WHEN "SPLATTER" IS THE MATTER under consideration, as in multicolored finishes, the resin to use is PLIOLITE VT. As one manufacturer discovered, this unique resin permits good "splatter" formation, greater hiding power and easier application using lower cost, safer solvents.

MUCH OF THE SUCCESS of tufted carpet can be laid to the back-size which anchors the tufts and adds much to its body and dimensional stability. Manufacturers base backings on CHEMIGUM LATEX to obtain long term age-resistance, good loop bind and resistance to cleaning.

PLIOLITE S-5 (the high styrene resin so widely used in masonry paints) can give you a better ink or a stronger adhesive or the specialized paper coating you've been looking for. Or maybe PLIOLITE VT (another copolymer resin especially suited for multicolored finishes) will work better for you.

On the other hand, it may be that an aqueous dispersion is better suited to your needs. The PLIOLITE styrene rubber and resin latices find application in a wide range of textile and paper products and in adhesives, dipped goods or foamed products. And if you need oil- or solvent-resistance, there's the line of CHEMIGUM (nitrile rubber) latices which can be used alone or with PLIOVIC (vinyl) latices for a variety of binders and coatings.

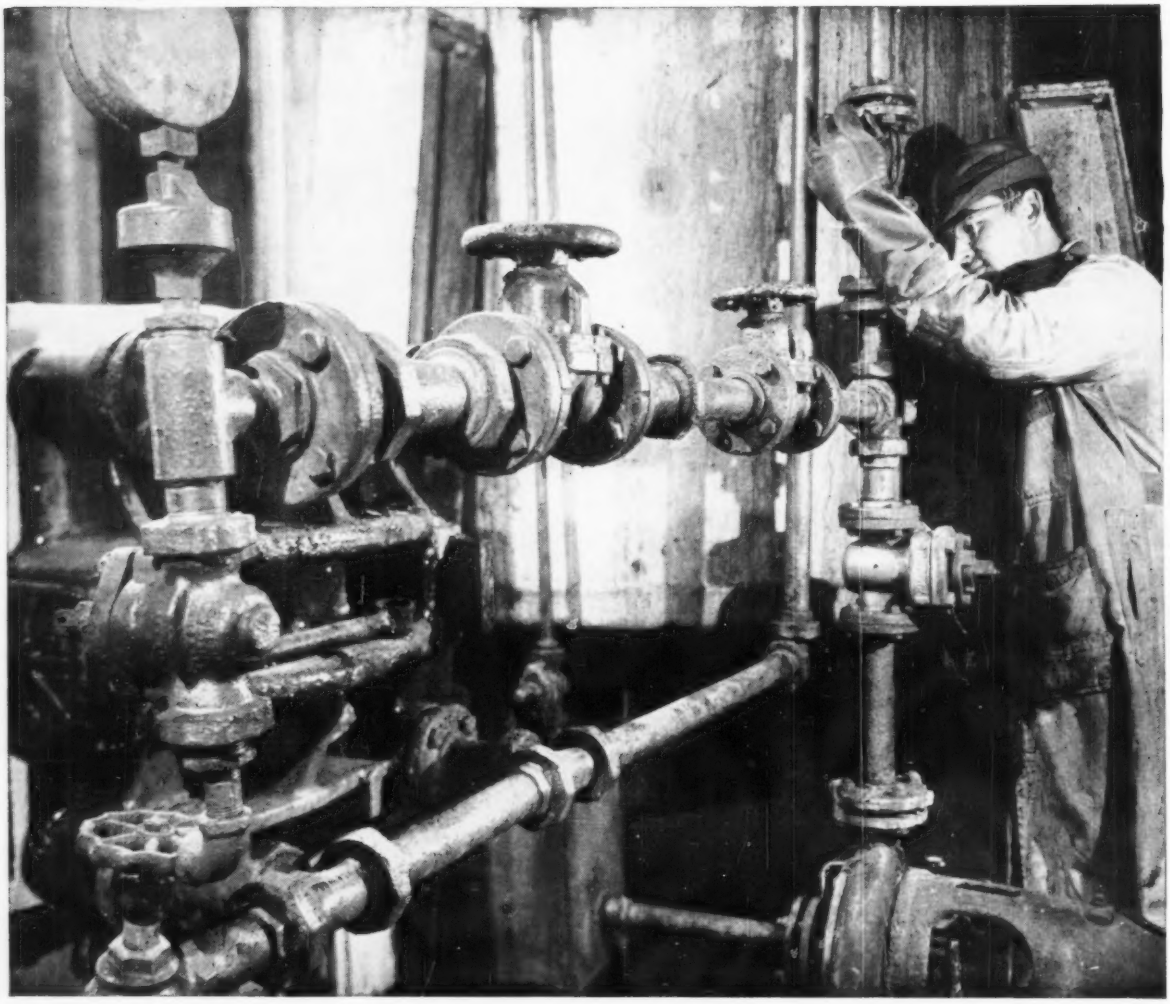
If you think you can profit from a sample of our products and services, why not call your special representative today? Or write Goodyear, Chemical Division, Dept. R-9417, Akron 16, Ohio.

GOODYEAR

CHEMICAL DIVISION

Pliolite, Chemigum, Pliovic–T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

DOW | **SARAN LINED PIPE**



After eight years carrying lithium chloride brine . . . No Corrosion in Saran Lined Pipe

When pipe must carry extremely corrosive lithium chloride brine . . . when floor-level installation freely exposes it to danger of accidental damage from trucks and tools . . . doubly protective Saran Lined Pipe can mean dependable, low-maintenance operation for many years.

Lithium Corporation of America's Minneapolis, Minnesota, plant produces pure lithium metal as well as various lithium salts. In the production of lithium chloride, Saran Lined Pipe is used to carry LiCl brine to drying equipment for the removal of water. This brine is extremely corrosive and will quickly eat through steel pipe should a crack develop in the lining. Other Saran Lined Pipe carries suspensions of lithium fluoride and hydrofluoric acid, a combination which will attack and destroy even glass. Because of its strength and extreme corrosion resistance, there's never been a failure in the Saran Lined Pipe.

Saran Lined Pipe at this plant is installed close to floor level in some working areas, constantly exposed to the danger of accidental damage from trucks and tools. Lithium's engineers stated, "Saran Lined Pipe provides protection from outside damage and from corrosion by the solutions carried. In eight years of pumping LiCl brine through Saran Lined Pipe at 30 to 50 psi, there's never been a breakdown, and very little maintenance was required."

Saran Lined Pipe, fittings, valves and pumps are available for systems operating from vacuum to 300 psi, from below zero to 200° F. They can be cut, fitted and modified easily in the field, without special equipment. For more information, write Saran Lined Pipe Company, 2415 Burdette Avenue, Ferndale, Michigan, Dept. 1780AM6-25.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

spends considerable leisure time on his leased, 3,300-acre ranch, where he raises prize Braford cattle. "I make a profit at it—I wouldn't do it otherwise." He admits to wanting a boat for the nearby Gulf, but "Mrs. Beutel wouldn't let me get one, says I wouldn't spend any time on it anyway."

Up from Cleveland: The Beutels live in Lake Jackson Farms, near the town of Lake Jackson, which Dow built in '43. His home, a summer house rebuilt and enlarged by Beutel, is a sprawling, comfortable place on the shores of Lake Jackson. A well-equipped shop, a short distance from the house, is kept spotless. The house is about 20 minutes from the Texas Division administration center.

Beutel hasn't always been able to live as well as he does now. He started working while still in grammar school, and worked his way through college. Although a mining engineer, Beutel's work on ore flotation required considerable chemistry. Nonetheless, his first job in '14 was with a coal company. He joined one in the Bay City, Mich., area (not far from the Dow works) more or less by chance ("I just wanted to get away from Cleveland").

Dow at that time was drawing many of its employees from Case; it was natural for Beutel to know many of them. When the coal business did not work out to his satisfaction, it was also natural for him to try Dow, in '16. His first work was in the drafting rooms under Tom Griswold, Dow's chief engineer at the time.

Two weeks before he joined Dow, he married Belle Armstrong, a pretty dark-haired, dark-eyed girl from St. Charles, Mich. "I told him I'd marry him if he got out of the coal mines," she says.

But he wasn't to stay out of the mines long. Several Dow employees—including Mark Putnam, Dow's executive vice-president, who still winces at the recollection—were buying into a coal mine at Jackson, Mich. Beutel heard about it, threw in with the group, and organized a company to exploit the property. He quit Dow, took over the mining. This was in June '20.

All went well until about November of that year. Then treacherous water-bearing strata caused a slide, and though no one was hurt, the mine was a total loss. Beutel was out of a job, out of money.

"He was really broke when he came back to Midland," recalls Leland Doan. "I think that mine was the only time Dutch ever stubbed his toe on a project."

He joined up with Dow again, this time in the pipe shop. For Dow, the '20s were a time of rebuilding. The industrial spurt caused by World War I had left it with several plants of little peacetime value. But it was soon able to get into synthetic phenol manufacture by a new process involving war-excess chlorobenzene. It also was able to foster interests in aromatic organic chemicals. Beutel was able to catch onto this building swing, pursue it to the point where he has literally built—not designed—the major new Dow units, from the California iodine unit and the now-closed North Carolina bromine plant to the Gulf plants.

Beutel was a contemporary and a close friend of Willard Dow, who took over the company at his father's death in '30, and of the others of the current Dow management team. This group was largely brought together in Dow's 1930-40 growth period. Dow fared very well in the '30s, and Midland has been termed "the town that never knew a depression."

Although he lived there for years, Beutel never really seemed at home in Midland, close friends say. It wasn't until he started the Texas Division that he really settled down. But he still keeps on the move. Dowell is based in Tulsa, he has his duties in Midland, responsibilities in Houston. Head of the Mexican operation, he journeys there from time to time; he has traveled widely on his own time, often accompanied by Mrs. Beutel.

Who's Next? Who will take over when Beutel retires? He's 67 now, was eligible for retirement at 65. At the Freeport plants, there are several assistant general managers who appear well qualified for the job. And it seems quite unlikely that Dow would go outside the division for a man to fill the position.

It is also clear that no one man will take over all the Beutel tasks. "It's a killing pace for anybody but Dutch," says one of his Texas staffers. In each of his special assignments, Beutel has carefully cultivated strong assistants.

And for the moment, there seems to be little reason to fret about who'll take over. Beutel is in excellent health, and his interests in Dow could scarcely be higher. Retirement, in any case, would likely not be full retirement—he has a contract with Dow to remain as consultant (at $25,000/year) until '68. Besides the consultant's stipend, Beutel is entitled to a pension in the $9-10,000/year range.

Beutel is still planning new things for his division. A giant power plant has been built recently, far from any current operations. He's not saying what's planned for the site, although expansion in polymer manufacture has long been one of his objectives.

Clearly, there's plenty more in sight for the Texas Division, whether or not its builder withdraws from active participation. And as retirement would surely not end Beutel's hard work and activities, neither would it end the Texas Division. Beutel built that to last well beyond any man's lifetime.

See why ALCOA ALUMINUM makes a good design habit

Requirement: Preserve the purity of chemical products in transport

Key to Good Design: Use tank cars, trailers and containers made of Alcoa Aluminum

Just as aluminum preserves the purity of chemical or petroleum products during processing, so it protects them on the way to the customer. Processors of ammonium nitrate, nitric acid and hydrogen peroxide depend on aluminum containers for moving their products because aluminum does not discolor, contaminate, or in any way alter the product as other metals can, and often do.

Tank cars, hopper cars, trucks and tanks made of ALCOA Aluminum resist corrosive attacks from a wide range of liquids and gases. Such containers are also nonsparking, for increased safety in transporting explosive or volatile products. For shipping hot ladings, ALCOA has developed aluminum alloy 5454 which combines high strength with metallurgical stability at elevated temperatures.

The flow chart below illustrates the acceptance of aluminum for transporting chemicals. Aluminum tanks and tank cars are used in the entire distribution system for nitrogen fertilizer solutions.

Other advantages of using this versatile metal for truck and trailer bodies and tanks are its light weight and high impact resistance. Aluminum tanks for highway vehicles are lighter than any other suitable metal. They offer real savings in a higher ratio of payload to gross weight, with less wear on the vehicles.

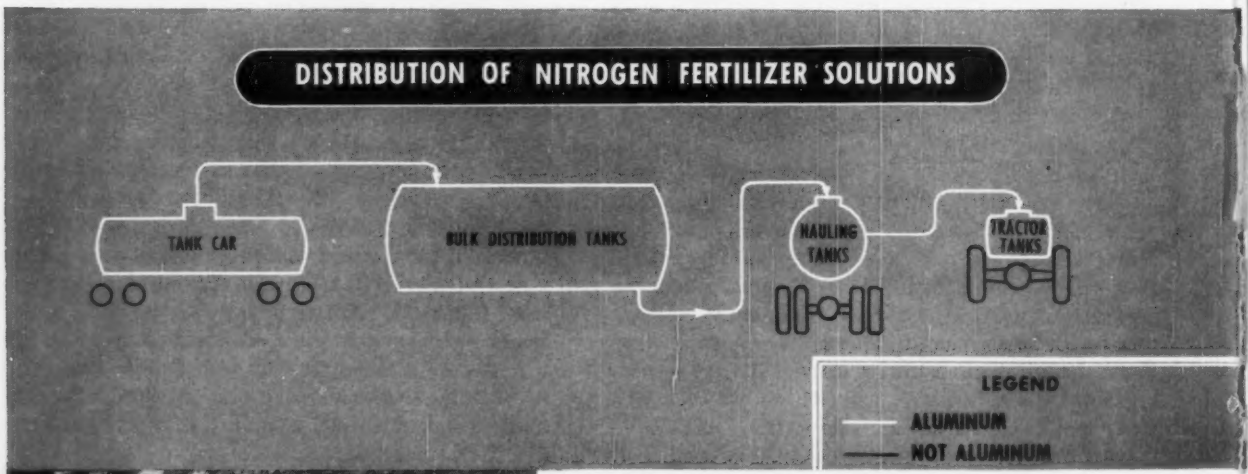
Aluminum's high impact strength is reflected in records of highway accidents. These show that aluminum tanks and truck bodies have survived and returned to service where tanks made of other metals have failed.

Tank cars, trailers and containers are easy to fabricate with aluminum. Highly workable alloys available from ALCOA lend themselves to standard welding and brazing techniques.

ALCOA engineers have worked closely with all segments of the process industries for over 40 years, and can help you specify the aluminum tank or container best suited for your product transport application. ALCOA's unparalleled experience in this field is available to you for the asking. Write to the address on the coupon, stating your requirements as specifically as possible. ALCOA's development engineers will welcome the opportunity to work with you on your problems.

You can also take advantage of the wide selection of free ALCOA literature on aluminum for transportation products and other process applications. Simply check the booklets you want on the coupon and mail to the address indicated. ALCOA will forward your material promptly and without obligation.

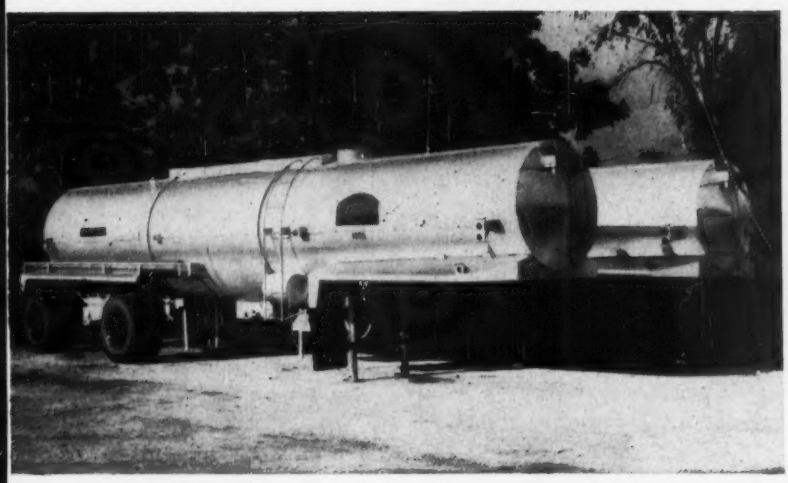
During 1960, ALCOA will conduct engineering conferences in a number of major cities on process industries applications of aluminum. Contact your nearest ALCOA sales office for full particulars and data.

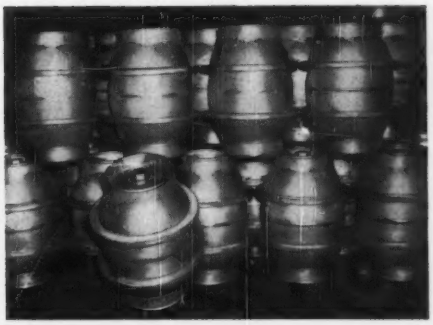


Alcoa Aluminum is used throughout the entire distribution of nitrogen fertilizer solutions, as shown in this flow chart. The ammonium nitrate in these solutions does not attack aluminum.

Barges fitted with aluminum tanks permit a greater payload at a given draft. Transport of acetic anhydride is shown here.

Aluminum hopper cars are widely used to transport sulfur and sulfur-bearing coal, and other solid products used in the processing industries.

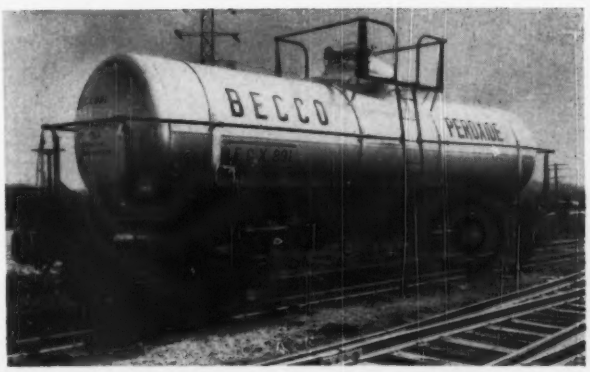




Alcoa makes a wide variety of shipping containers for the processing industries. Conforming to ICC regulations, these containers range in size from 7½ to 110 gal, and are used for shipping such diverse products as beer and fuming nitric acid. Alcoa alclad beer barrels cost 30 per cent less, are 45 per cent lighter than barrels of competing metals, and give longer service life.

Aluminum truck, trailer and tank bodies offer substantial savings in payload because of their light weight. Aluminum is specified because it will not contaminate such products as distilled water, hydrogen peroxide, formaldehyde, fatty acids and other chemicals. Maintenance costs are lower since aluminum requires no special protective coatings. The trailer illustrated is fabricated from Alcoa Aluminum Alloy 5454, and is used for handling hot asphalt, sulfur and other hot ladings.

Alcoa research has developed special aluminum-magnesium alloys combining high strength with the compatibility of high-purity aluminum for peroxide service.



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Aluminum Company of America, 870-F Alcoa Building, Pittsburgh 19, Pa.

Please send me the following literature covering Alcoa Aluminum for product transfer and other uses in the process industries:

- ☐ 10197 Aluminum Pipe and Fittings
- ☐ 10418 Alcoa Unitrace: Combines Piping and Tracing in One Unit
- ☐ 10270 Alcoa Utilitube
- ☐ 10460 Process Industries Applications of Alcoa Aluminum
- ☐ 20849 Resistance of Aluminum Alloys to Weathering and Resistance of Aluminum Alloys to Chemically Contaminated Atmospheres
- ☐ 11453 Solving Refinery Corrosion Problems with Aluminum
- ☐ 20437 Aluminum Alloy Heat Exchangers in the Process Industries
- ☐ 19416 Brazing Alcoa Aluminum
- ☐ 10415 Welding Alcoa Aluminum
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Name_____

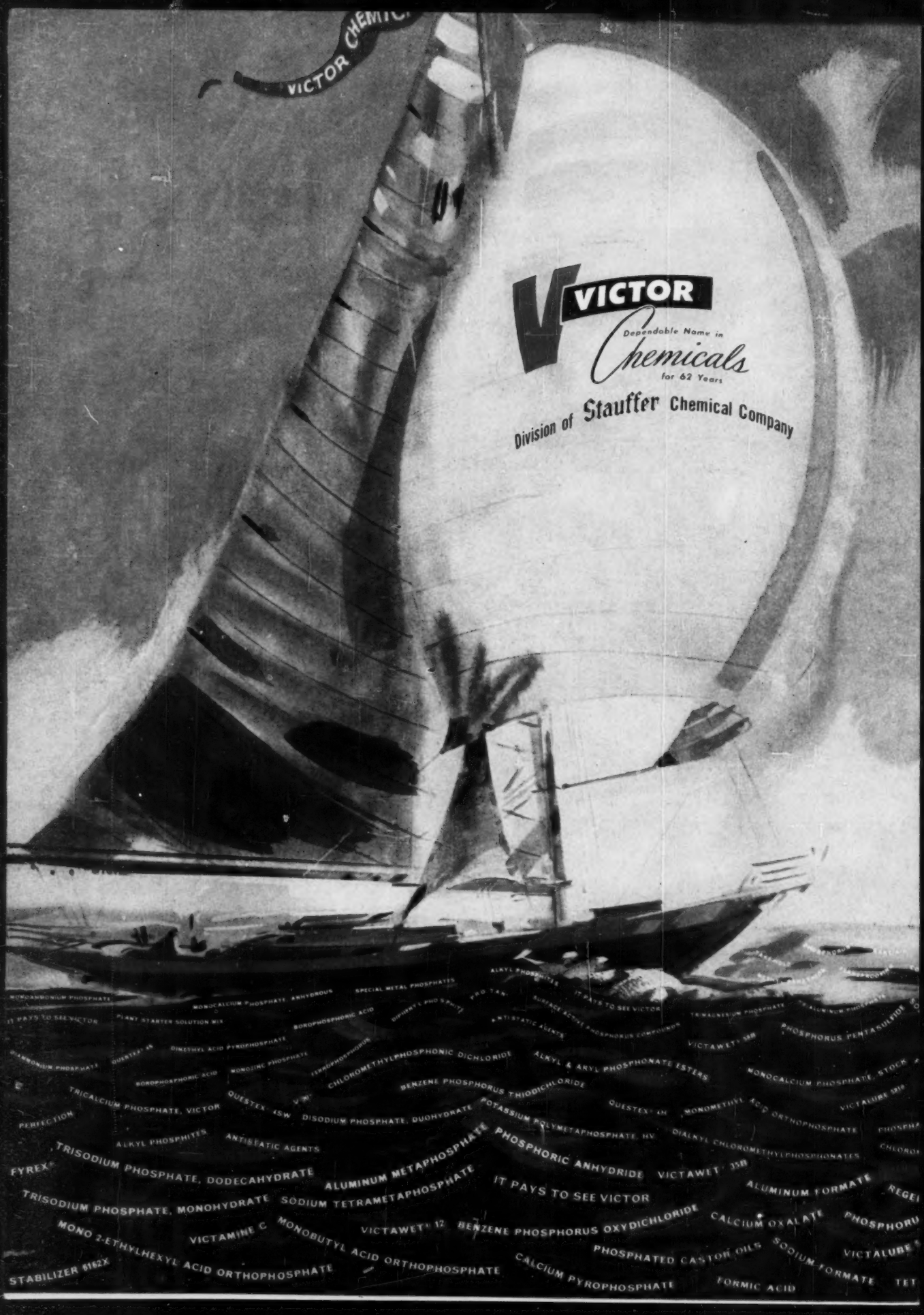
Company_____

Title_____

Address_____

City_____ Zone_____

State_____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Dependable Name in
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for 62 Years
Division of Stauffer Chemical Company
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ALKYL PHOSPHITES
ANTISTATIC AGENTS
FYREX
TRISODIUM PHOSPHATE, DODECAHYDRATE
TRISODIUM PHOSPHATE, MONOHYDRATE
SODIUM TETRAMETAPHOSPHATE
ALUMINUM METAPHOSPHATE
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VICTAWET 35B
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MONOBUTYL ACID ORTHOPHOSPHATE
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FORMIC ACID
ALUMINUM FORMATE
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VICTOR CHEMICAL WORKS
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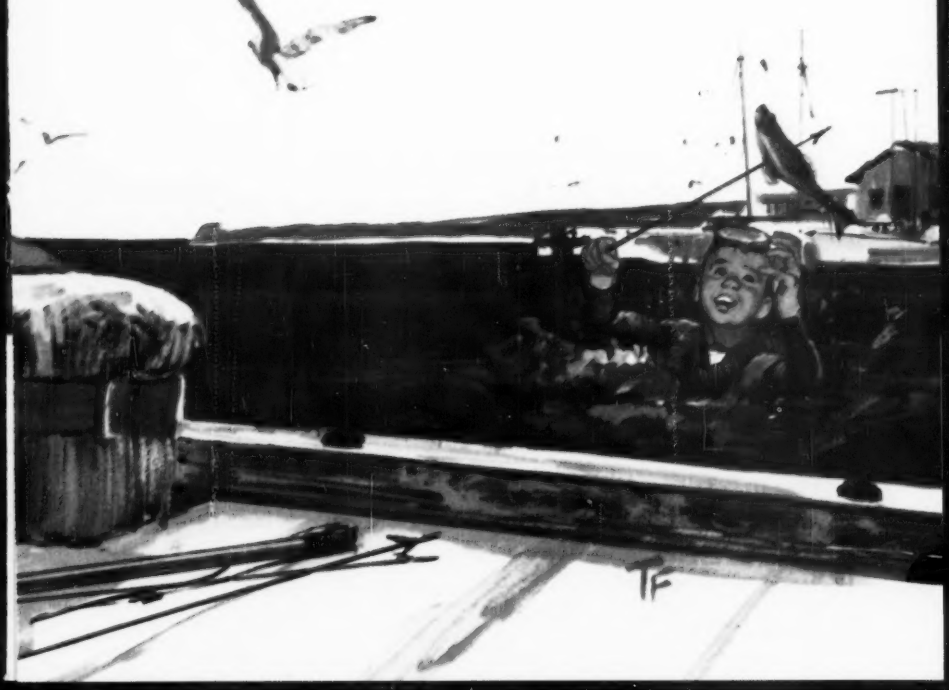
Questex® helps the quest

In the skin diver's underwater world, the quest for adventure varies. Some search for buried treasure; others prefer action—like spear fishing. Whatever the preference, there's no question that Victor's versatile chelating agent —Questex®—plays a significant role.

As many synthetic rubber manufacturers know, Questex in combination with other ingredients produces rubber that is strong, resilient, heat-resistant—for top-quality skin diver flipper fins, hoods, masks, suits, even the propellants for spear guns...ideal for many other rubber products, too.

We're not going off the deep end when we offer to show how Questex solves sequestering problems. Give us one of yours. Our chemists will dive right into it. More than likely they'll come up with a satisfactory solution. Then you, too, will join more than 40 other industries in saying "*It pays to see Victor.*"



Potassium phosphates pour to his rescue

Pity the poor pledge! He's obviously the rawest rookie on this kitchen police force. But the worst is over—once he gets the dishes in the sink.

There, Victor potassium phosphates combine their synergistic action with liquid detergents to take over and cut elbow grease as well as greasy foods. Plates, glasses, tableware all come out sparkling, sanitary, spotless. You don't have to go to school to

know that wherever you find the best soaps and detergents, you also find Victor phosphates.

Here's something *else* you find at Victor: swift, courteous, confidential help with problems you may have that involve phosphates in products or production. Here's an easy assignment: clip the coupon on the back page for a quick and easy course in how "*It pays to see Victor.*"

Phosphoric feeds "tasselers"

Knee high by the 4th of July... then, finally, "corn gets as high as an elephant's eye." One good reason "tasselers" are so tall they're worth singing about is that Victor phosphatic fertilizer solution gives them such a good start in life.

Today many farmers depend on fertilizer manufacturers and formulators who specify Victor ammonium phosphates, potassium phosphates and phosphoric acids for liquid and dry concentrates. Easy to apply, these fertilizer solutions promote good root structure, assure rapid and healthy growth.

We'd like to talk over *your* problem, be of assistance where phosphates are used. Here's a fertile idea if you'd rather do a little "field work" *before* calling us in: fill in the coupon on the back page to find out, quickly, "*It pays to see Victor.*"

VICTOR CHEMICAL WORKS
Division of Stauffer Chemical Company
Box 271, Chicago 90, Illinois

☐ Please send samples of the following Victor chemicals:

.....

.....

☐ Our company is in the ..... industry.
Please send your latest Victafile.

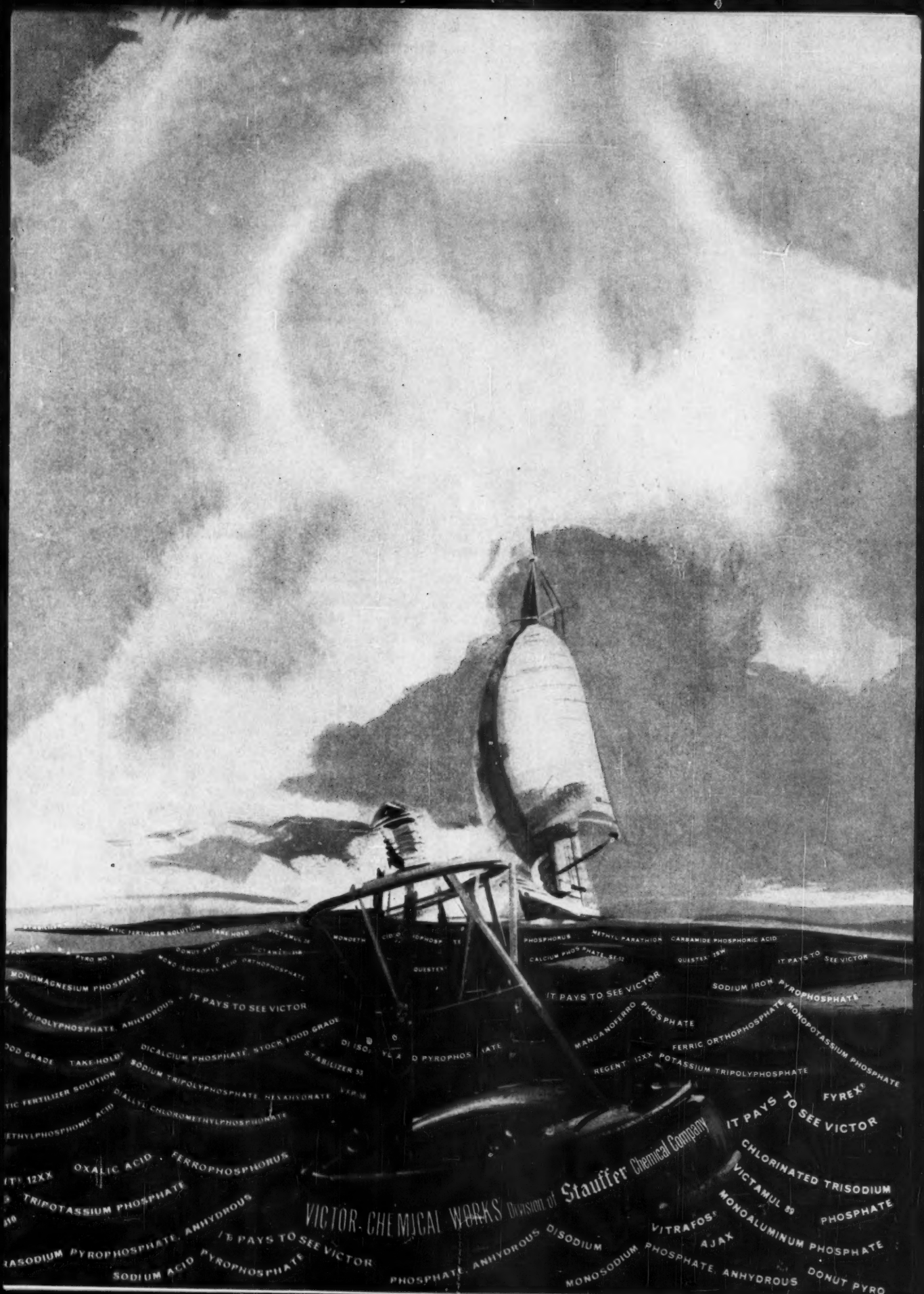
☐ We wish to have a discussion with a Victor representative. Please have him call for an appointment.

Name ..... Title .....

Company .....

Address .....

City ..... Zone ..... State .....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Eastman

Alcohols

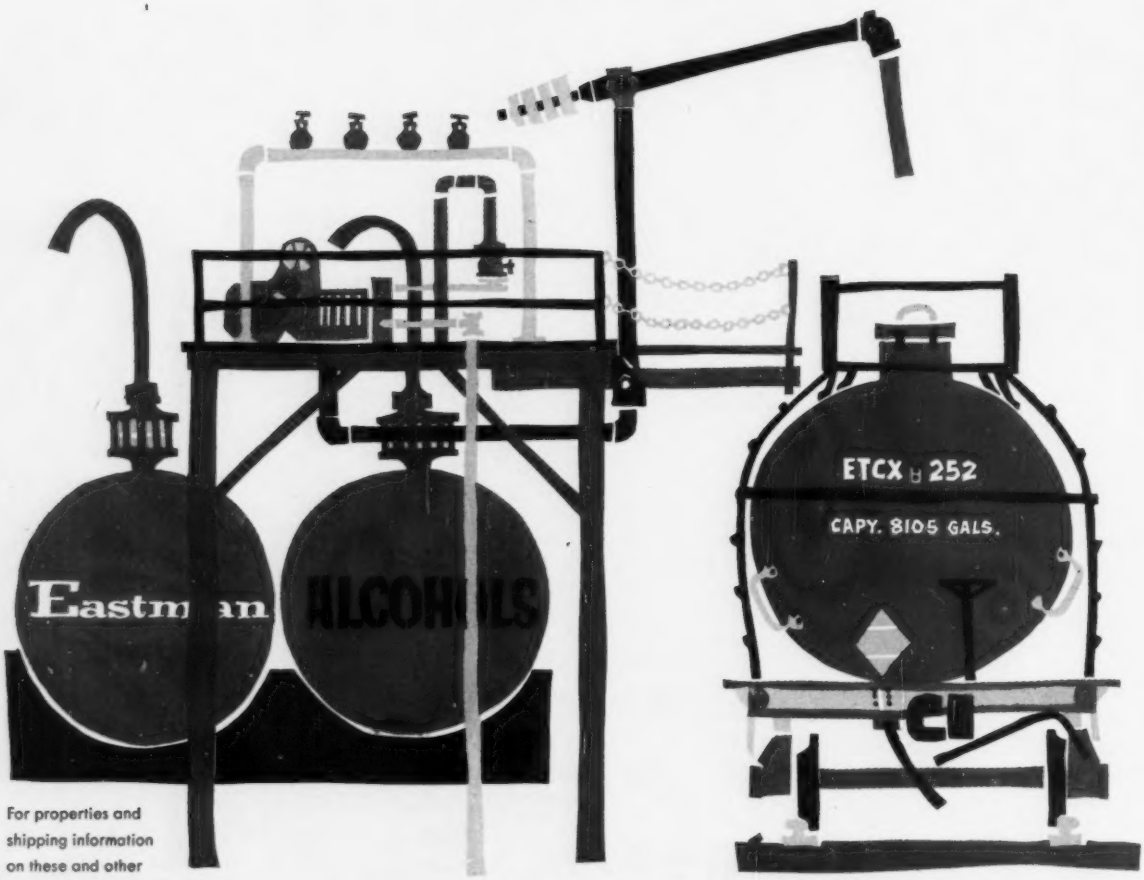
ethyl alcohol
95% and anhydrous

Tecsol®
proprietary ethyl alcohol

n-butyl alcohol

isobutyl alcohol

2-ethylhexyl alcohol



For properties and shipping information on these and other Eastman products, see **Chemical Materials Catalog,** page 395 or **Chemical Week Buyers Guide,** page 97.

Eastman alcohols are available in bulk from major industrial centers. For samples or specifications, write or call your nearest Eastman representative.

Eastman CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE, subsidiary of Eastman Kodak Company

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Detroit; Framingham, Massachusetts; Greensboro, North Carolina; Houston; New York; Philadelphia; St. Louis. **West Coast: Wilson and Geo. Meyer & Company,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

Product Shower 'Soft Sells' Specialties

Today's bride is tomorrow's shopper, figure household specialties makers who woo newlyweds with free samples of cleaners, shampoo, aspirin.

This month some 200,000 brides will walk down wedding aisles in the U.S. Shortly thereafter they will be walking down supermarket, drugstore and department store aisles—purchasing household supplies. Many will be forming their initial brand preferences. It's an opportune time for marketers of specialty products to make a strong pitch for their products.

An attempt to do just that is the reason behind the existence of Bridal-Pax Inc. (West Hempstead, N.Y.), a sample-distribution outfit, which will hand out 70,000 kits this month containing sample supplies of such items as household cleaner, toothpaste, furniture polish, headache pills and other consumer specialties. The company claims that over one-third of this year's married couples will carry away these "bridal packs" from U.S. marriage license bureaus.

Bridal-Pax estimates that the 1.7 million or so couples getting married in '60 will spend $9 billion in their first year of marriage. And Bridal-Pax's dozen specialties and food company participants see a good opportunity to tap this budding consumer group.

Specialties Welcome Wagon: The average Bridal-Pax kit includes eight regular-size items worth about $4 retail. Most of the products are specialties. Procter & Gamble (Cincinnati) supplies the largest number of different products: Cheer, Joy, Comet cleanser, Prell shampoo, Camay soap, Crest toothpaste, Spic and Span, and Mr. Clean. Products contributed by Bristol-Myers (New York) include Mum Mist and Ban deodorants and Bufferin. Chemway Corp. (Wayne, N.J.) distributes Zonite; S. C. Johnson (Racine, Wis.) supplies Jubilee wax.

Other Bridal-Pax clients are Thayer Laboratories, Personal Products Division of Johnson & Johnson, Corn Products Co., General Mills, Inc., and General Foods Corp.

Maternity Minded: While Bridal-Pax is showering gifts on some 600,000 brides this year its sister organization, Gift-Pax, will hand out Hospital-Pax kits to 3.5 million new mothers this year. The packages contain about six baby items, which would retail for $3. Presentations are made through some 4,000 hospitals.

Two other sampling operations are conducted by Bridal-Pax: Travel-Pax distributes through hotels, steamships and airlines; and College-Pax gives away cosmetics, shave cream and cigarettes in 150 colleges via campus bookstores.

Better than Coupons: The company has been distributing through hospitals, travel lines and colleges for close to a dozen years. In '55, however, a number of manufacturers asked the company to think of a new method of distributing samples to new-

VERSATILE, POWERFUL
DISPERSING AGENTS
LOMAR®
series of naphthalene sulfonic acid condensates

The Lomar series supply the powerful dispersing properties required to handle dyes, pigments, clays, graphite, mica, carbon black, and other inert powders. They improve manufacturing processes as well as finished products in fields involving:

Cement
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Wet milling
Paint and asphalt emulsions
Pitch and slime control in papermaking
Preventing coagulation in latex
Foundries
Tanning

New! We have just published a booklet on the Lomar series. It contains full information on this valuable line of dispersing agents. Send for a free copy today.

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lyweds that might be an improvement on the traditional method of mailing coupons. Bridal-Pax was formed and got into the wedding arena two years ago.

Through all of its various sampling plans, the company gives away products valued at about $12 million each year (retail). Fees are charged the participating manufacturers according to the size, weight and volume distribution of their products (minimum distribution is 30,000). Average fee: 10¢/unit. This adds up to a tidy gross of over $1 million/-year for Bridal-Pax and Gift-Pax.

Nearly all the products the two companies distribute are nationally advertised brands. Occasionally there's a local tie-in, i.e., a local drugstore offering $1 worth of free merchandise for every $4 worth purchased, or photographers offering free portraits of babies.

About the only restriction on acceptance by Bridal-Pax or Gift-Pax is that they will not use competing brands of any one product.

Nationwide Shower: This year these packages for newlyweds will be presented in 800 cities. Most common methods of distributing Bridal-Pax is through marriage license bureaus or clergymen. In a few cities, such as New York City, where the license bureau will not perform this function, Bridal-Pax delivers the packages itself to the couples' homes. (Hospital-Pax kits are delivered by nurses.)

The Big Payoff: When a bride receives her Bridal-Pax, she signs a receipt. This enables the company to keep track of its distribution and to provide manufacturers with names and addresses if they wish to make a follow-up check.

Most participating companies make their own surveys to find out the effect of the product sampling plans as a marketing tool. Bridal-Pax has also done surveys; it says that increased usage of the products ranged from 217% for a new food product such as Dream Whip (a dessert topping) to 10% for the well-established Ivory Snow. Average rise in use is estimated at 70%.

Psychology, which seems to be the key to Bridal-Pax's success, is paying off nicely for participating marketers. They look for a long honeymoon between new brides and their products.

New Peaks for Paint

The paint industry achieved record sales in the early months of '60. Latest figures (factory shipments) indicate that in the first four months of this year total sales amounted to $588.5 million, a gain of 3.7% over the comparable period last year. Helping swell the total was sales for April of $178.3 million—best one-month figure, and 4.6% better than April '59.

Trade sales for these months were $339.6 million (up 3% over '59), while industrial sales were $248.9 million (up 4.6%). The breakdown for industrial sales: paint and varnish, $181.8 million (up 4.1% over '59); lacquer, $67.1 million (up 6%).

Production figures: total four months, 226.5 million gal. (up 2.1%); total trade products, 115.1 million gal. (down 0.7%;) total industrial products, 11.4 million gal. (up 5.1%). Industrial production: 78.1 million gal. for paint and varnish (up 5.9%); 28.7 million for lacquer (up 2.9%).

EXPANSION

S-W in the Southeast: Plans for construction at Morrow, Ga., of a "multimillion-dollar" paint factory and wholesale distribution center—its 11th such facility—have been completed by Sherwin-Williams Co. (Cleveland). First unit will be a 40,-000-sq.ft. warehouse, with completion set for late fall. The plant will have an annual capacity of about 7 million gal., making it the largest paint factory in the Southeast.

•

New Purex Headquarters: The Purex Corp. Ltd. (South Gate, Calif.) is building its new international offices in Lakewood, Calif. Construction is scheduled for completion by June 30, '61. Value of the land and construction is estimated at over $2 million. First building to go up on the 6½-acre site will have 62,000 sq. ft. of space, and there is room to expand to 169,000 sq.ft.

•

Alabama Plant Expansion: Monsanto Chemical Co. will expand its Anniston, Ala., plant by 50%. The addition will increase annual capacity of Monsanto's insecticides, parathion and methyl-parathion, to 18 million lbs. Completion: November.

ONE OF A SERIES

Printed by offset lithography on 80-lb. paper containing Wyandotte PURECAL® in the coating.

Can Wyandotte technical service make a sick product well?

WYANDOTTE CHEMICALS

In many cases, it can . . . but letting a product get sick in the first place is costly business at best.

Moral: Don't hesitate to call on technical service when things are going smoothly. One of the most valuable functions it can perform for you is to spot *potential* trouble.

It is available to you at raw-material procurement, research, development, manufacturing, sales, and shipping levels.

It draws on the manifold skills of Wyandotte's entire organization . . . chemists, chemical engineers, physicists, and many other specialists with extensive industrial or research experience in specific product fields.

It has much to contribute to all phases of your quality-control program.

But . . . we realize that critical problems can arise without warning in the best controlled operations. This is why our technical service is geared to meet emergencies. It knows no hours. We have qualified men on duty round the clock.

Is this 24-hour availability really necessary? We think so . . . for it has proved helpful, many times. And this, fundamentally, is the aim of technical service . . . to be helpful, in any way possible.

For a pictorial presentation of Wyandotte technical service at work, please turn page.

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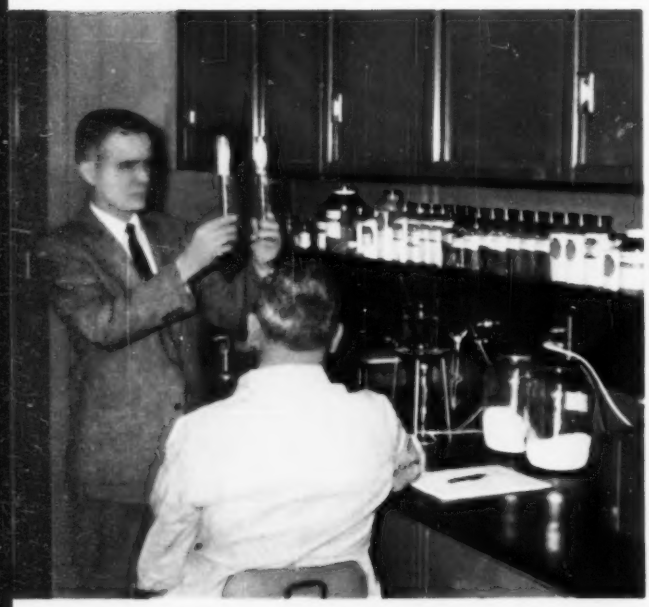
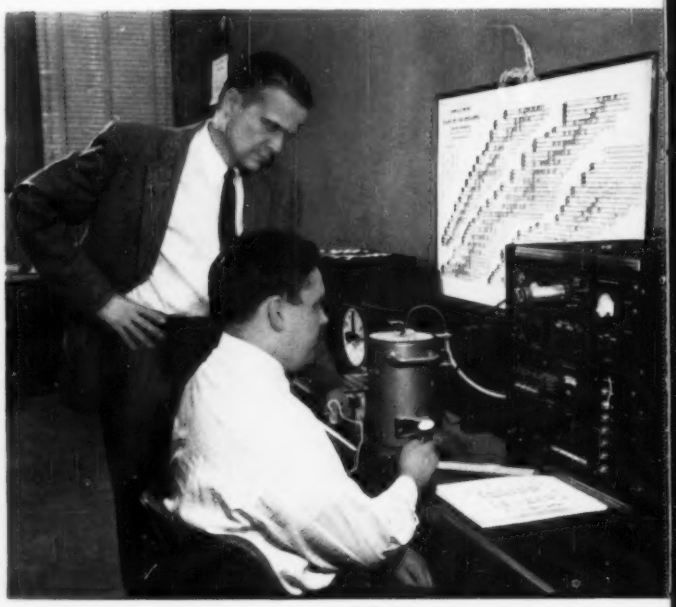
Improving the performance of detergents

. . . an example of Wyandotte technical service at work



1 A household detergent manufacturer, seeking greater whiteness retention and detergency for a new laundry product, called in Wyandotte technical service. Addition of Carbose®, Wyandotte's special grade of CMC, designed specifically to improve whiteness retention, is indicated; varying amounts are tried in sample formulations.



2 In the Wyandotte nucleonics laboratory, soil-suspension efficiency is tested by tagging soil with radioactive isotopes. Fabric swatches coated with this soil are then washed in the new formulations to determine which performs best. Precise cleaning performance is measured by the amount of residual radioactivity detected by a Geiger counter.

3 One of the samples tested proves to have the desired properties, and the formulation is submitted to the interested company. A carload order is placed, and Wyandotte technical service works with the company to arrive at the most economical and convenient method of shipping the Carbose . . . in this case, palletizing.

HELPING DETERGENTS do a better job is just one of the many ways technical service aids Wyandotte customers and prospective customers in the soap and detergent industry. Our experience encompasses many industries: plastics, pulp and paper, petroleum, paint, textiles and rubber, to name a few. If you have a problem that falls within our technological or manufacturing background, check with us . . . our approach is designed to provide answers. *Wyandotte Chemicals Corporation, Michigan Alkali Division, Wyandotte, Michigan. Offices in principal cities.*

Wyandotte
CHEMICALS

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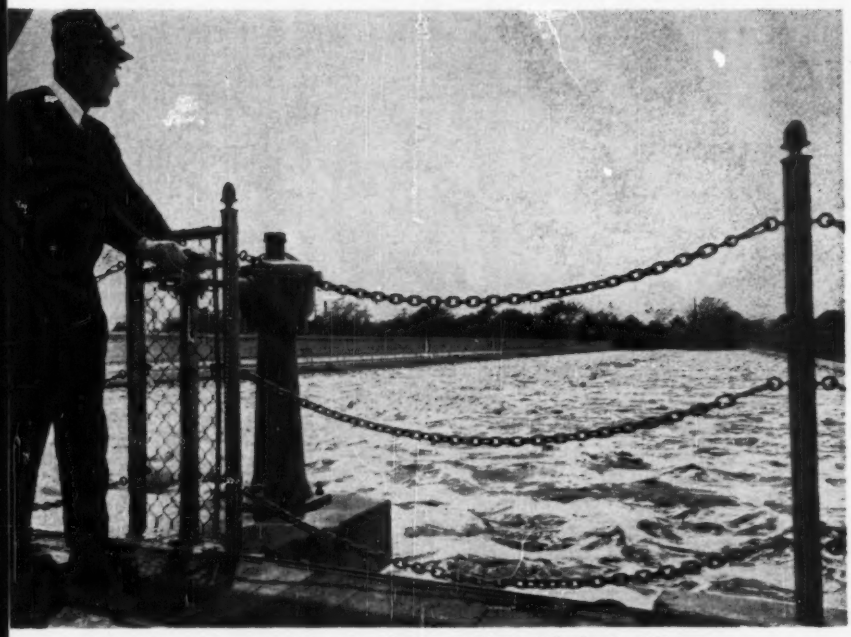
833



Waste-water treatment plants gain added significance as . . .

CPI's Water Needs Rise

The chemical process industries, due to triple their water consumption in the next 20 years and likely to become the U.S.'s biggest industrial water users, can look for more rigid rules about water and waste treatment to accompany this upsurge. That's a major conclusion to be drawn from two reports just published by the U.S. Senate's Select Committee on National Water Resources.

The most recent report, out last week, underscores the water treatment aspect. It points out that of the 117 million people in the U.S. served by public utilities 70 million are re-using water that has been used at least once for domestic sewage and industrial waste disposal. Moreover, says the report, since most of these consumers are located near urban centers, further concentration of population, as well as use of water, will "tend to increase the percentage of re-use . . . for municipal purposes."

No U.S. city is yet salvaging water directly from its sewer outlets. But when natural water sources become more difficult to find or expensive to develop, and as the degree of the treatment of waste water increases, the report continues, such salvaging is a distinct prospect.

Thirsty Industry: The committee's earlier report, published in May, estimated that by '80 chemical plants will consume 3.3 times as much water as they do now. Three industries—chemicals, steel and paper—will use up four times as much water as all other U.S. consumers together use today. Plainly these will be industries vying with municipalities for fresh water—or most concerned with water re-use.

Technical advances are expected to reduce some manufacturers' demands on streamflows. The steel industry, for instance, will use more recirculated water and salty and brackish water available in tidewater areas.

But no reduction in use of fresh water for chemicals is anticipated nor will water be re-used much by chemical processors because of the high cost of cooling and treating it. Potentially the largest single users of water, the chemical process industries are expected to need 29 billion gal. daily by '80, compared with the steel industry's 19.5 billion gal. Today steel is the top consumer. Pulp and paper makers, with water use totaling 18.8 billion gal./day, will barely trail steel, says the committee report.

Control Unavoidable: Such increased demand, plus concomitant growth of water re-use, points to more stringent controls on water purity in the future, either at local or federal levels. Whichever it will be, the chemical companies that begin now to study their water purification and re-use systems will be that much closer to meeting future antipollution demands.

Where control will be concentrated is hard to say now. In testimony before the select committee the National Assn. of Manufacturers urged Congress to permit industry maximum freedom in handling water problems, stressed that any federal antipollution controls should be minimal so as to maintain state sovereignty.

NAM cited comments from most major U.S. industries, including one from the Manufacturing Chemists' Assn., intended to show that each had taken progressive, self-initiated steps toward policing of its own pollution problems.

Close Cooperation: The MCA report also stressed that CPI companies are giving increasingly more consideration to joint facilities with municipalities—plants in which treatment of municipal and industrial waste is combined. In some cases industrial waste is treated in the municipal plant.

In other cases—particularly the American Cyanamid plant at Bound Brook, N.J., now in operation (*see picture*), and that of Union Carbide Chemicals Co. at South Charleston, W. Va., now under design—municipal wastes are treated in the industrial plants.

A secondary point MCA makes is that recent investigations by chemical companies show that certain toxic wastes previously thought biologically untreatable are destroyed when mixed with nontoxic sewage in the conventional biological treatment facilities.

Despite pleas for local administration and industry self-policing, however, most observers agree that federal interest in water conservation and development will continue to increase. As evidence they point to several factors. For example, the Senate Public Works Committee has just approved a bill authorizing $1.5 billion for 128

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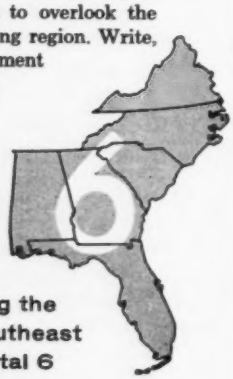

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ADMINISTRATION

navigation, flood-control and other water-development projects in 38 states. In amending a $647.8-million authorization bill passed last year by the House of Representatives, the committee approved all 50 projects in that measure and added 78. The bill would merely authorize projects; money must be appropriated separately.

Another indication of intensification of federal interest in conservation and pollution is the recent decision by the U.S. Public Health Service to begin, for the first time, a nationwide system of reporting the "frequency and locations of fish killed by pollution." USPHS calls the project "an effective means of obtaining . . . information needed to determine the effects of pollution on the nation's water resources."

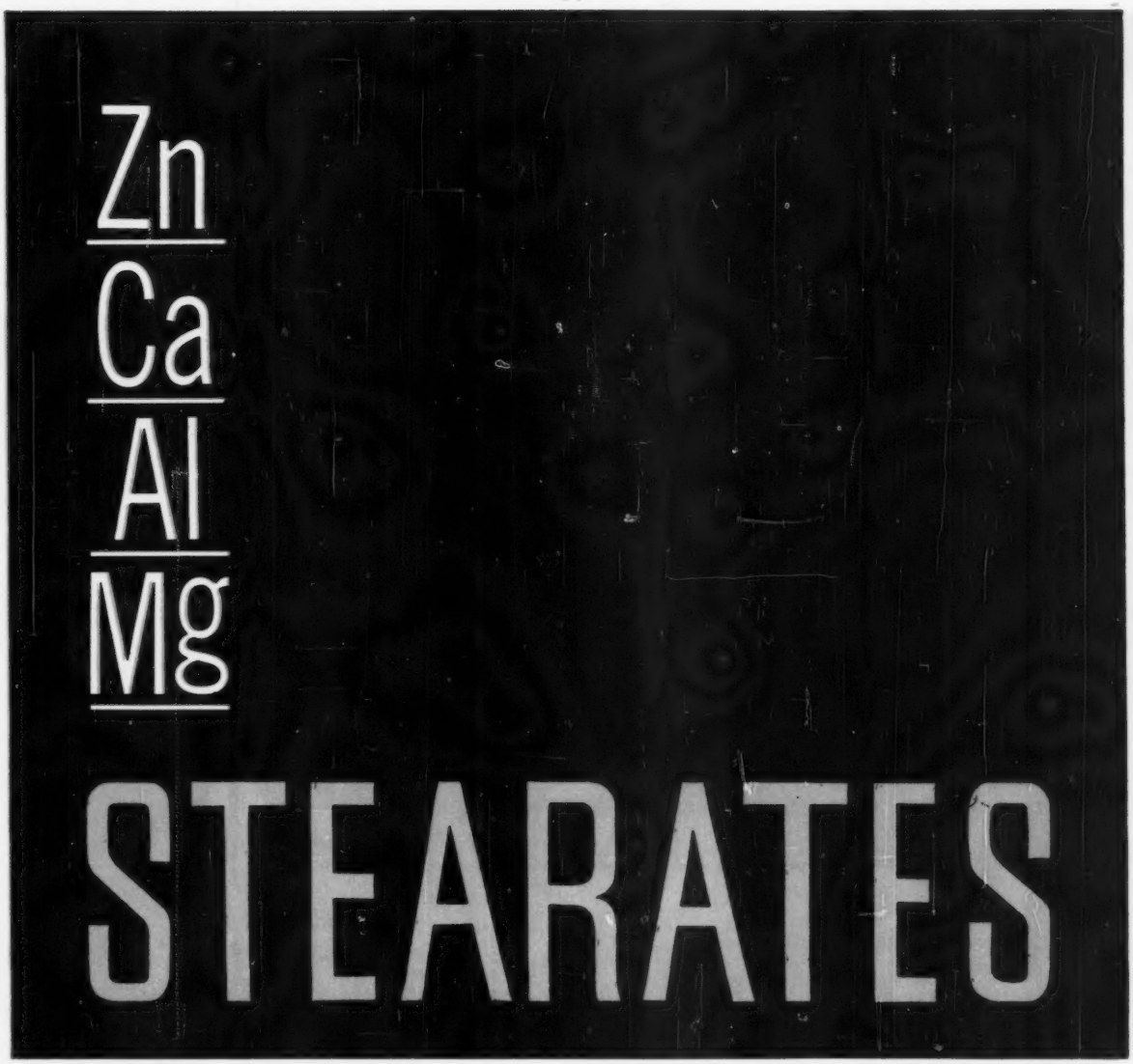
It's a fair bet that even though chemical companies choose isolated sites, pressures will continue for high-level government controls.

LABOR

Potash Problem: Although settlements have been reached on wage issues, about 320 employees of Southwest Potash Co. (Carlsbad, N.M.) walked off their jobs in a dispute over noneconomic issues. The United Stone & Allied Products Workers is demanding job descriptions for mobile equipment operators, while the company takes the stand that rigid job classification of maintenance personnel would lead to featherbedding. The strike followed a breakdown in negotiations, which were being handled separately from the economic issues agreed on earlier.

•

Jefferson Strike: The one-month-old strike of Local 4-228, Oil, Chemical & Atomic Workers Union, at Jefferson Chemical Co.'s Port Neches, Tex., plant shows little sign of being settled soon. Management has submitted 11 proposals to the union as a basis for a new contract and has denied six union proposals. Although wages are not at issue, according to the company, it has proposed rate increases in three job classifications, and the union has asked for raises in six others. In the area of fringe benefits, one management offer would permit the union to work out a hospital insurance plan with a carrier



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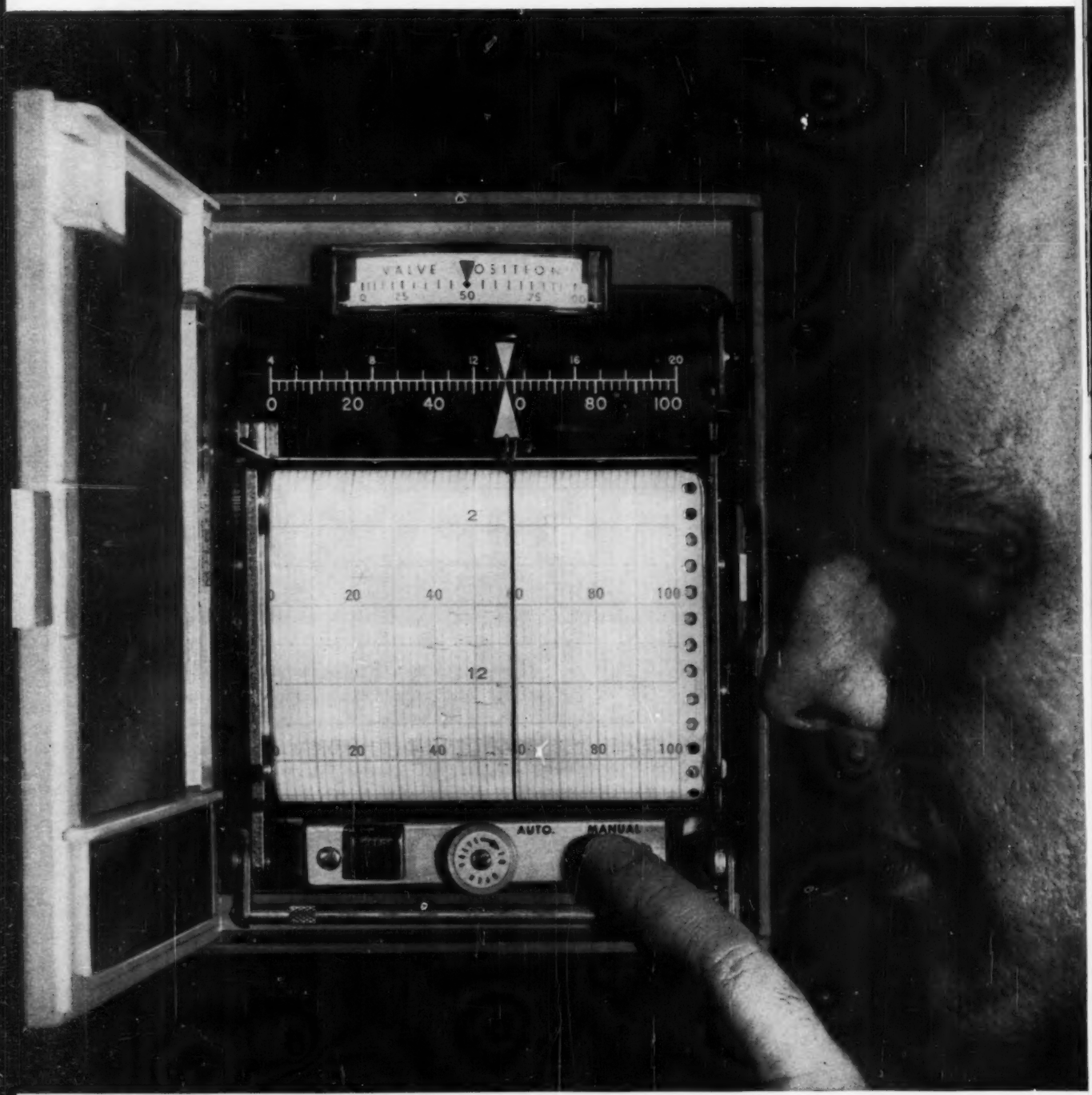

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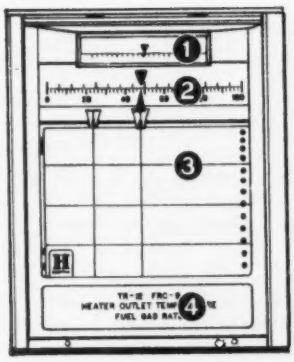

1 Valve position indicator continuously indicates controller output when on automatic control.

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ADMINISTRATION

of its choice; the company would contract for the coverage.

•

Rubber Go-Round: Another round of negotiations is coming up in the rubber industry as the United Rubber Workers union begins serving notice of negotiations. It has advised Firestone Tire & Rubber to reopen the company-wide contract for bargaining on the wage increases—among URW's proclaimed '60 bargaining goals—for some 18,000 workers. The Firestone-URW contract runs until April '61, but has a reopening clause allowing for wage talks at any time. Negotiations would affect employees at Firestone plants in Akron, Los Angeles, Noblesville and New Castle, Ind., Memphis, Fall River, Des Moines, and Pottstown, Pa.

URW has served notice on one other company — Congoleum-Nairn, Inc.—to negotiate on a new contract that would affect 1,300 workers. Last summer industry wage increases averaged about 10¢/hour.

LEGAL

Radiation Suit: Suits totaling $425,000 have been filed in U.S. district court in Knoxville, Tenn., by four of eight Oak Ridge, Tenn., atomic plant workers who received radiation exposure in a nuclear reaction accident two years ago. The workmen claim the federal government, defendant in the case, failed to take necessary safety measures. Union Carbide Nuclear Co. operates the plant for the Atomic Energy Commission.

All four workers claim that weakened eyesight, general bodily weakness—one claims sterility—resulted from the accident. The trouble occurred when a highly enriched uranium solution—thought to be only water—was drained into an unshielded, 55-gal. drum.

•

Cotton Case: A $188,011.02 damage suit against Du Pont, alleging that a weed killer injured cotton crops in '57 and '58, has resulted in a jury verdict for the company. The suit, filed in Arizona superior court in Tucson, claimed that Du Pont's monuron weed killer injured 716 acres of cotton over a period of two years. However, technical evidence of expert witnesses apparently convinced jurors that use of the weed

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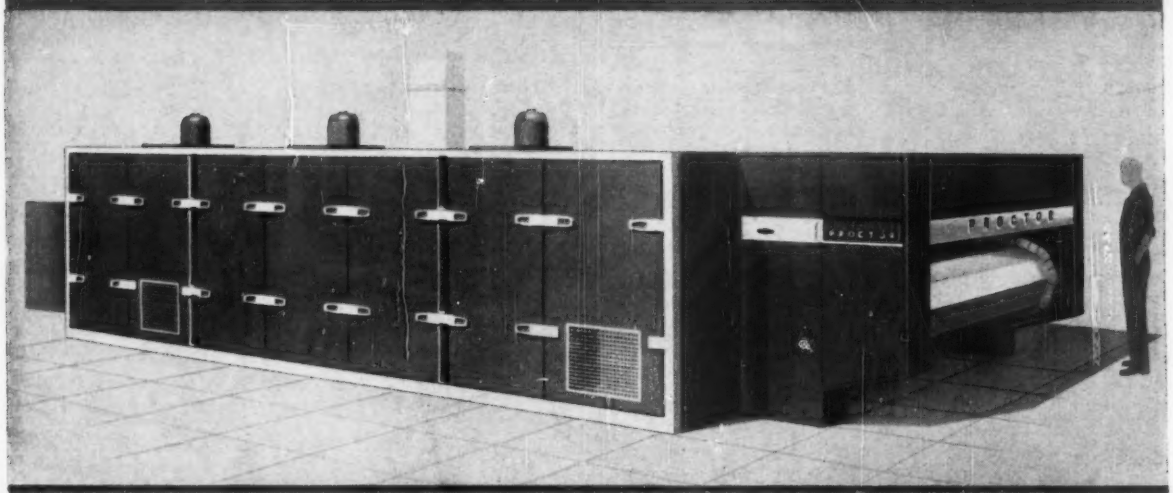

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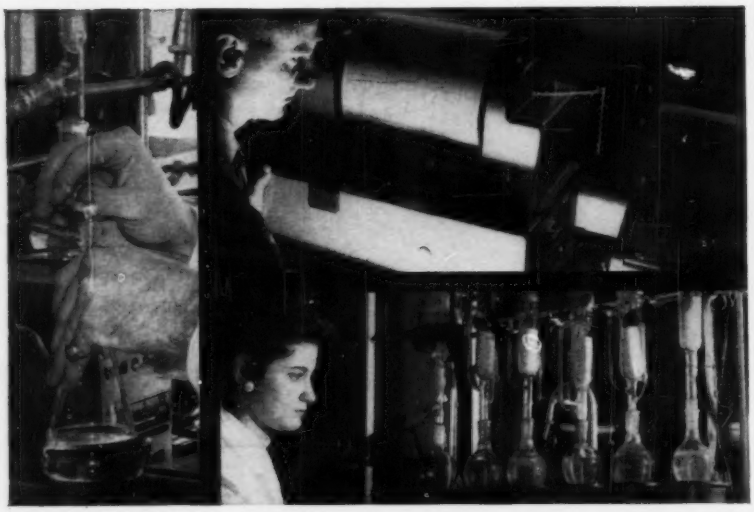

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killer was sound practice, based on extensive trials in many areas. Evidence also was introduced to show that cotton yields from the fields may have been reduced by a blight.

KEY CHANGES

Milton O. Schur to vice-president, research, Packaging Division, Olin Mathieson Chemical Corp.

Ernest Moncrief to vice-president, coordinator, foreign operations and **James P. Wiseman** to vice-president, Mid Continent Division, The Fluor Corp. Ltd. (Los Angeles).

Edward L. Rastatter to vice-president, sales, **James E. Irvine** to vice-president, engineering, **Ronald G. Goodwin** to vice-president, pulping development, all of parent company; and **Thomas T. Cowhey** to vice-president, general manager, Canadian subsidiary, Bauer Bros. Co. (Springfield, O.).

E. W. Allison to vice-president, sales and marketing, **G. C. Van de Riet** to treasurer, **F. J. Chmielnicki** to secretary, Detrex Chemical Industries, Inc. (Detroit).

David C. Baird to assistant secretary and assistant treasurer, The Dow Chemical Co. (Midland, Mich.).

Edward H. Smythe to marketing director, Agricultural Division, and **T. Dean Smith** to manager, petrochemical department, **Borden R. Putnam,** to manager, explosives and mining chemicals department, American Cyanamid Co. (New York).

Onnik S. Tuygil to managing director, newly formed subsidiary, Monsanto Belgium, S.A., Monsanto Chemical Co. (St. Louis).

William E. Melby to director, sales and marketing, Pharmich Laboratories Division, Michigan Chemical Corp. (Saint Louis, Mich.).

ASSOCIATIONS

R. C. McCurdy, president, Shell Chemical Co., to chairman of the board, Manufacturing Chemists' Assn.

DIED

Walter F. Silbersack, 58, president and director, American Home Products Corp., Inc., at Darien, Conn.

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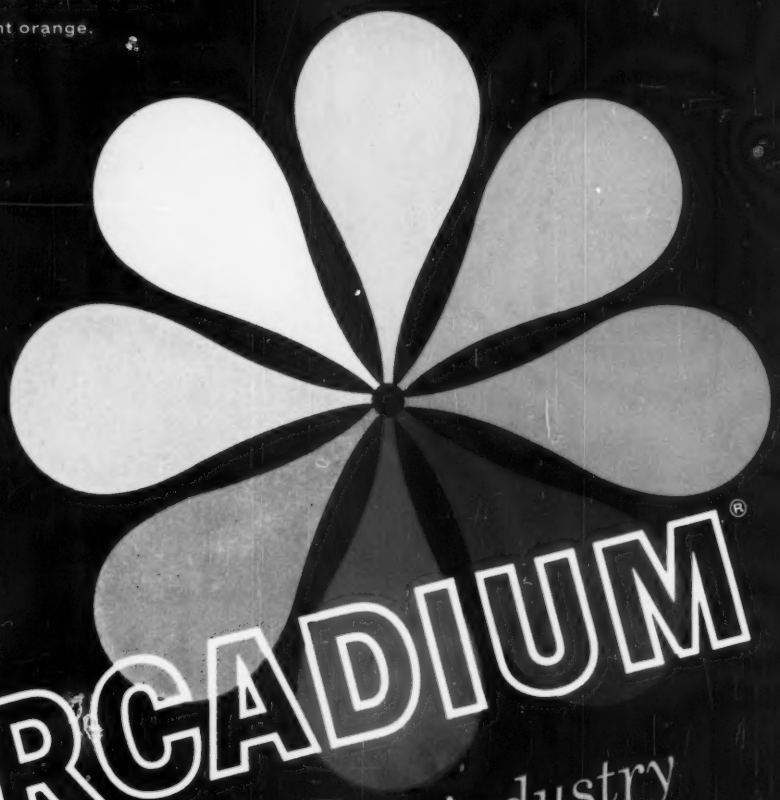

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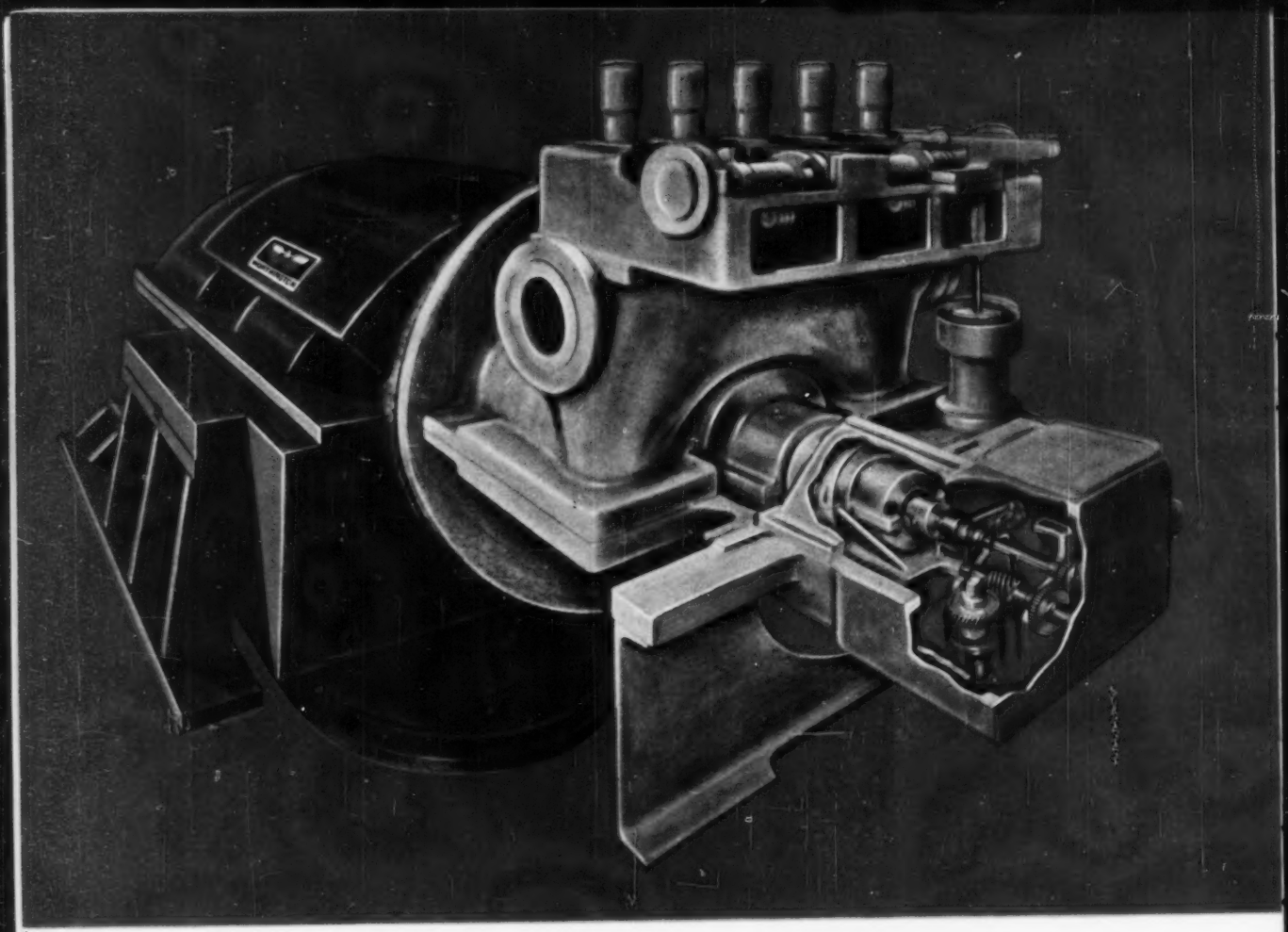

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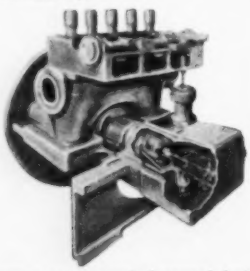
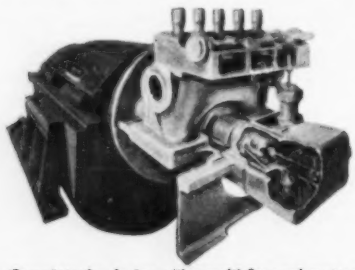
1. Use an existing high-speed bearing case and a high capacity thrust bearing.



2. Add a high-pressure steam end of proved design with cam operated automatic nozzle control valves.



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WORTHINGTON

Technology
Newsletter

CHEMICAL WEEK
June 25, 1960

A fluidized-bed process for making metallic columbium was described to AIChE at Mexico City this week by Battelle Memorial Institute's J. H. Oxley. Columbium chloride vapor at 1500 F is fed, along with hydrogen, into a bed of fluidized columbium seed pellets. The hydrogen reduces the columbium chloride, forming hydrogen chloride and precipitating commercially pure columbium onto the pellets. The seed pellets are reformed by grinding a portion of the product.

Although the beneficiation of columbium ores still remains a problem, the new process is expected to help reduce metallic columbium prices currently pegged at about $55/lb. And it may spur new uses for the metal outside the nuclear field. Currently, combined forms of the metal (50-60% columbium) are far more significant industrially than the pure material, as 1958 production figures show: metallic columbium, 33 tons; ferrocolumbium and ferrotantalum-columbium (used in alloys and special steels): 430 tons.

A new phenol process was also unveiled at the Mexico City meeting. Scientific Design Co.'s Ralph Landau, outlining the operation, said that, in effect, it permits the direct oxidation of benzene to phenol without the customary production of by-products. Earlier attempts at direct oxidation, such as a 5,000-tons/year plant operated by Allied's Solvey Process Division in the '40s, have not been economically successful. Problem: phenol oxidizes more readily than benzene, resulting in low yields and formation of undesired breakdown products of phenol.

Inherent advantage of a direct oxidation route: its low capital investment. This feature, coupled with the new route's adaptability to small-scale phenol production, Landau points out, makes it attractive for the package-plant concept favored by the Latin-American petrochemical industry.

•

A patent application for an ultrasonic dyeing method has been filed by Ethel Fleming, research director of B. M. Harrison Electrosonics, Inc. (Newton Highlands, Mass.). Ultrasonic dyeing hasn't worked out commercially in the past, despite wide interest among textile firms. But the Fleming process, used in combination with elevated temperatures and "an electronic means for controlling the concentration of the dyes," may open the system to commerciality. The technique is said to "produce a uniformity of color tone and saturation difficult to achieve by normal means."

•

Starch phosphates are now in pilot production by American Maize-Products Co. (Hammond, Ind.), and the firm is contemplating a 60,000-lbs./week plant. Frozen foods could be the first big market for the products (as a thickener); other possible uses are as a taconite ore binder; in adhesives, drugs, and cosmetics; and as a low-cost substitute for gum arabic, locust bean gum, and carboxymethyl cellulose.

Technology Newsletter

(Continued)

Patents covering the manufacture and end-uses of starch phosphates are licensed by AMP from International Minerals & Chemical Corp. (Skokie, Ill.). The product "starch phosphate" is an ester made from a mixture of ortho-phosphate salts (sodium dihydrogen phosphate and disodium monohydrogen phosphate) buffered to pH 7 and reacted with starch.

Unlike regular starch, the phosphate is cold-water soluble. It has greater thickening power than corn starch; solubility can be varied (by varying the percent of phosphate composition and the degree of dehydration); and it can be frozen and thawed repeatedly without change in physical properties. Price is now 12.5¢/lb. and the ultimate commercial price isn't expected to drop much lower.

•

Crystalline polymers of higher aldehydes are described by Du Pont in Australian patent application 50,881/59. Key: catalytic polymerization of a number of aldehydes—particularly aliphatic ones containing 2-10 carbon atoms—to crystalline products with average molecular weights of at least 20,000. To prepare them, the aldehyde is dissolved in a liquefied olefin solvent (ethylene, propylene or butylene) at —30 to —110 C and at atmospheric pressure, then polymerized in presence of an alkali metal-containing catalyst. The product is said to be useful as a plastic molding material.

•

A new drug to combat the poultry killing disease coccidiosis has been developed by Aries Associates (Stamford, Conn.). The firm's president, R. S. Aries, estimates the potential yearly world market for the drug at $30 million ($20 million in North America). Generically named mepyrium, the compound is 1-(2-propyl-4-amino-5-pyrimidylmethyl)-2-methylpyridinium chloride hydrochloride. It's reportedly made from low-cost petrochemicals such as acrylonitrile, butyronitrile, and alpha-picoline. Commercial processes for making alpha-picoline and other alkyl pyridines used in mepyrium's synthesis were worked out with the cooperation of The Distillers' Company, Ltd. of Great Britain.

Earlier this year Dow Chemical launched Zoamix, a feed premix coccidiostat containing 25% of 3,5-dinitro-*o*-toluamide. The latter compound is known by the coined name of zoalene.

•

Heat-resisting high-strength fibers can be made from metallic oxides by a "relatively simple" process developed by Horizons Incorporated (Cleveland). Typical is aluminum oxide (alumina) fiber with tensile strength of 300,000-400,000 lbs./sq. in. at 4750 F, compared with glass fiber, which has a tensile strength of 200,000 psi. Prices are forecast at $10-12/lb.

•

Goodyear is now testing a high-temperature polyamide tire cord. It melts at 600 F, whereas regular nylon tire-cord melts at 482 F. The new fiber, called HT-1, is made by Du Pont, which is chary about giving any details. It does say that although HT-1 shows promise, it may not prove economical as a tire material.

MATTER OF RECORD

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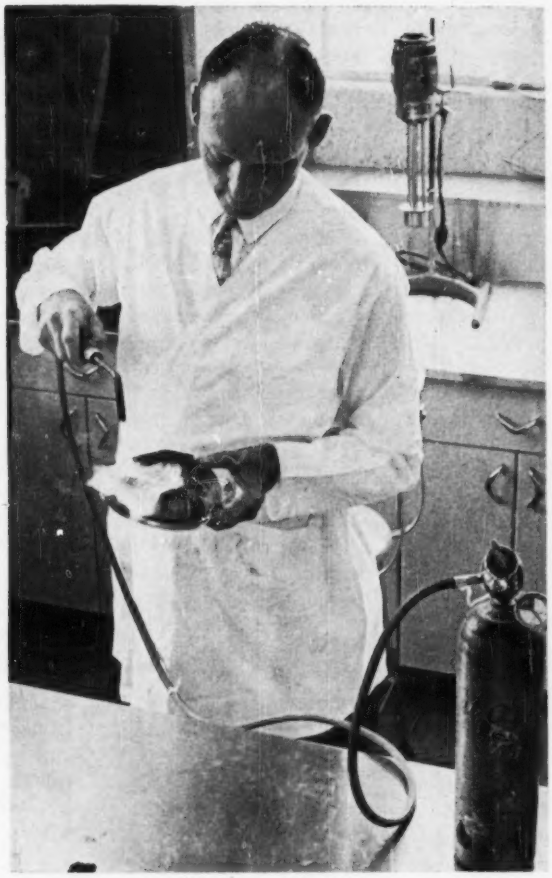


Dyna-Therm's Davis (above) tests product's heat resistance, talks over results with associate Clarke.

Putting the Heat on Space-Age Plastics

Dyna-Therm Corp. (Culver City, Calif.), readying its new research lab at nearby Burbank this week, figures to hypo sales from the current $1.5 million to $10 million by '65. The new sales are expected to come from research-derived additions to the firm's present line of heat-resistant urethanes, polyester and epoxy resins, adhesives, and polysulfide sealants and calking compounds.

What makes Dyna-Therm optimistic is its ability to quickly formulate new products to the needs of individual customers. Research Vice-President Elbert Davis explains that larger companies have to seek out the broadest applications for their formulations.

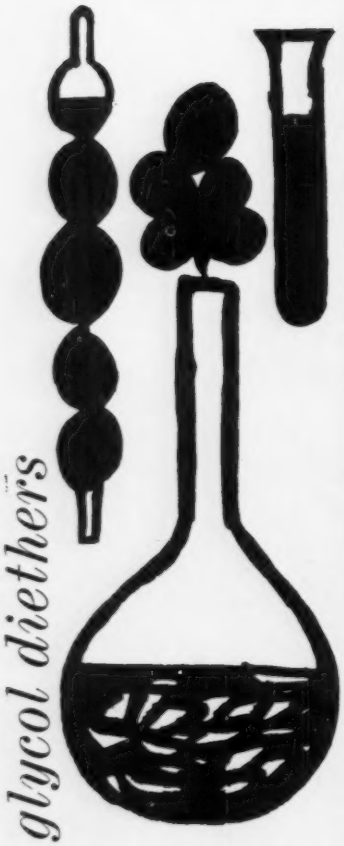
By tailoring its research efforts to suit the customer, Dyna-Therm figures to maintain a fast growth pace.

Davis, also a director of the firm, was former owner of Plas-Kem Corp., now a Dyna-Therm division, where the new $100,000 lab is going up. He plans to maintain a research and development budget amounting to 5% of annual sales, beginning with about $75,000.

That's not much in an industry where million-dollar R&D budgets are common, but it's quite a bit for a small company. The present lab currently employs eight full-time chemists (including Davis)—one-fifth of the company's total work force.

Immediate development goals set by Davis include:

- For the Saturn missile program, a heat-resistant, urethane-based coating that will dry and cure like paint and exceed the specifications of urethane-based Dyna-Therm 65, introduced earlier this year, which is able to withstand 6000 F for one minute at 50-mils thickness (*CW Technology Newsletter, March 26*).
- A urethane elastomer as tough as vinyl and competitively priced. Object: major markets as a sealant for clay sewer pipe, since urethane, unlike vinyl, does not require oven curing, thus permitting the casting of larger pipes.
- A protective and decorative coating that can be applied to steel members before they are formed and fabricated. U.S. Steel has submitted this problem to compounders, and a race is on to come up with a vinyl plastisol that elongates 25% and still retains suitable bond and physical



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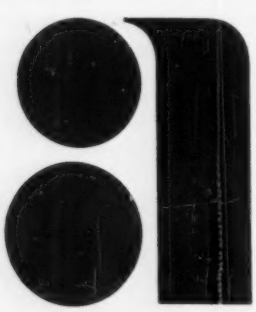

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN • INDUSTRIAL CHEMICALS • REFRIGERATION PRODUCTS • FIRE FIGHTING EQUIPMENT

properties when it is formed with steel.

Dyna-Therm President Herbert Clark, Jr., formerly a Borden Chemical vice-president, is cheerful about prospects for such new products, last week had more reason for optimism: his firm had just received a new, $72,000 contract from Hercules Powder Co. for Dyna-Therm's Flamemastic high-temperature protective coating for the Nike Hercules missile. Orders for the product (employed as a thermal shock coating on rocket booster tubes) for both the Nike Hercules and Nike Ajax programs now total nearly $1 million.

Essentially, Flamemastic consists of an epoxy resin binder containing boron and phosphate materials (also used in Dyna-Therm 65) and insulating fillers. The company is working on a variety of other formulations for Saturn coatings, some involving urethanes, others epoxies.

Bumper Crystal Crop

Large single crystals of a number of refractory metals and their compounds are now being made by a new arc-fusion process developed by Linde Co., division of Union Carbide Corp., at its Indianapolis laboratory. The newly available form of these materials is expected to lead researchers to better understanding of their basic properties, as well as to allow the production of wrought forms.

The roster of metals that can be grown by the new technique includes tungsten, molybdenum, vanadium, columbium and tantalum—all in single crystals up to 12 in. long with maximum diameters of ⅜-¾ in., depending on the metal. Metal compounds now under study include molybdenum disilicide and the monoxide, sesquioxide and carbide of titanium (maximum lengths of ¼-⅜ in. and maximum diameters of ½-2 in.). Soon to be added to the company's commercial crystal-growing program are columbium carbide, vanadium sesquioxide, titanium diboride and tungsten disilicide.

The technique for growing the crystals is similar to the Verneuil flame-fusion method used in making the company's line of sapphires and other oxygen-containing crystals (*CW, Sept. 19, '59, p. 79*). However, the use of electric arcs allows a wider range of temperatures and atmospheres.

Profit Prescription

Industrial research took a tongue-lashing last week from Purdue's Prof. Herbert Brown. He made his remarks at the New York meeting of the Synthetic Organic Chemical Manufacturers Assn., which had just presented him with its first SOCMA Medal for Creative Research in Organic Chemistry.

Brown charges that the quality of much of the research in the organic chemical industry is "very, very bad." He pointedly excepts pharmaceuticals.

The major problem, he says, is narrowness of objectives. Theory: when coupled with fixed time limits, narrowness tends to dissuade even the most talented researchers from investigating by-product results that could eventually prove to be more valuable than the original goal.

Brown cites his own experience, in which, he says, "Almost every major new development was realized, not as the original objective of the research but as the by-product of a study with other objectives."

Lesson for industry: "The attempt to realize the largest and most rapid return on the research dollar actually leads to less research results per dollar spent and less ultimate benefit to the organization."

PRODUCTS

Cold Set: A new additive that cuts costs, ups strength of cold-setting adhesives was unveiled at Forest Products Research Society's recent annual meeting in Montreal. The polyphenolic intermediate, extracted from western hemlock bark, is used as a partial replacement for higher-cost resorcinol in phenol-modified, resorcinol-formaldehyde resins to which a setting agent composed of paraformaldehyde and fillers is added. It's called HT-120, was developed by Rayonier Inc.'s Olympic Research Division (Shelton, Wash.). Douglas fir laminates bonded with the new adhesive formulation at room temperature resisted delamination by boiling water.

•

Biochemical: For peptide synthesis, Mann Research Laboratories, Inc. (New York), now offers *p*-nitrobenzoxychloride. Price: $20/25 grams.

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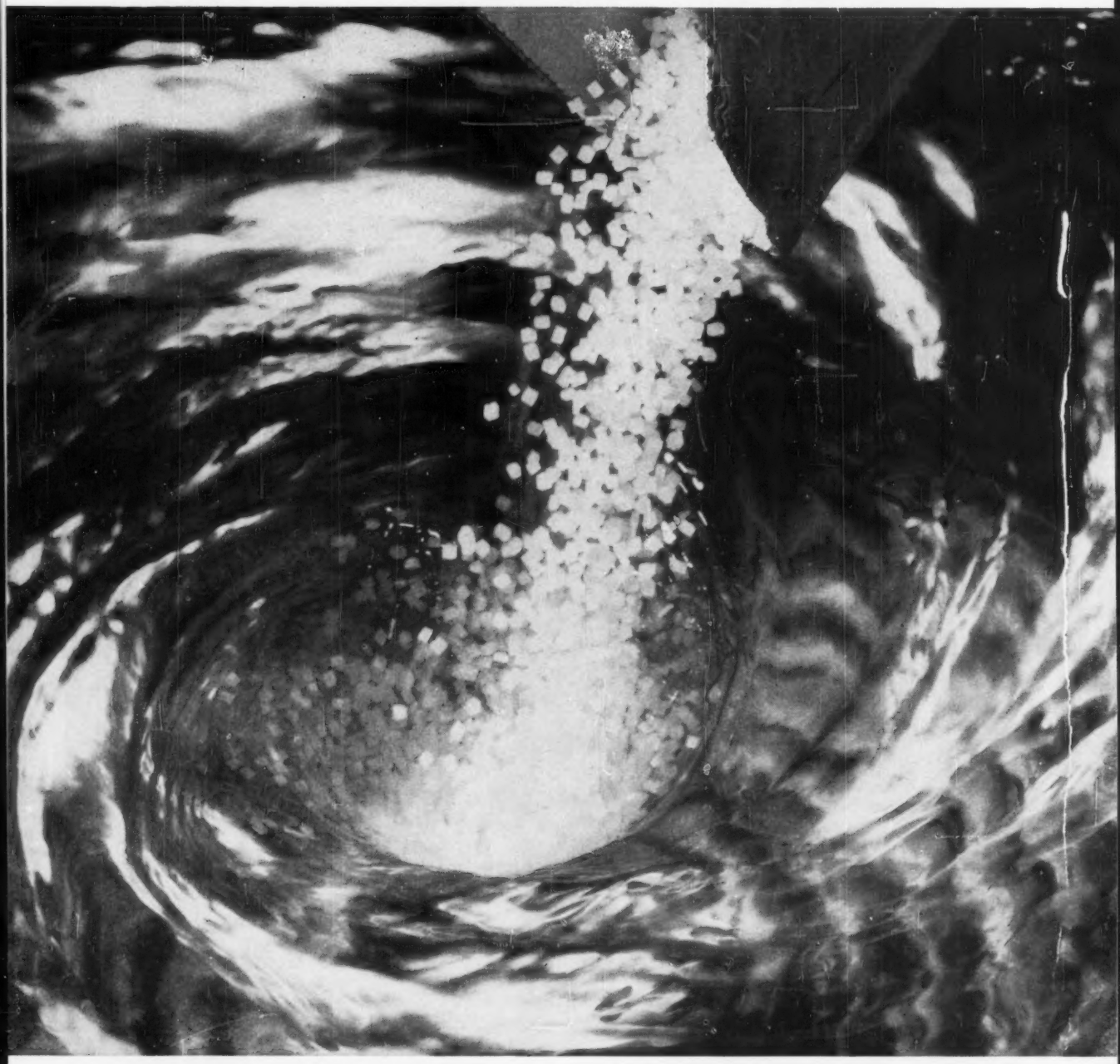

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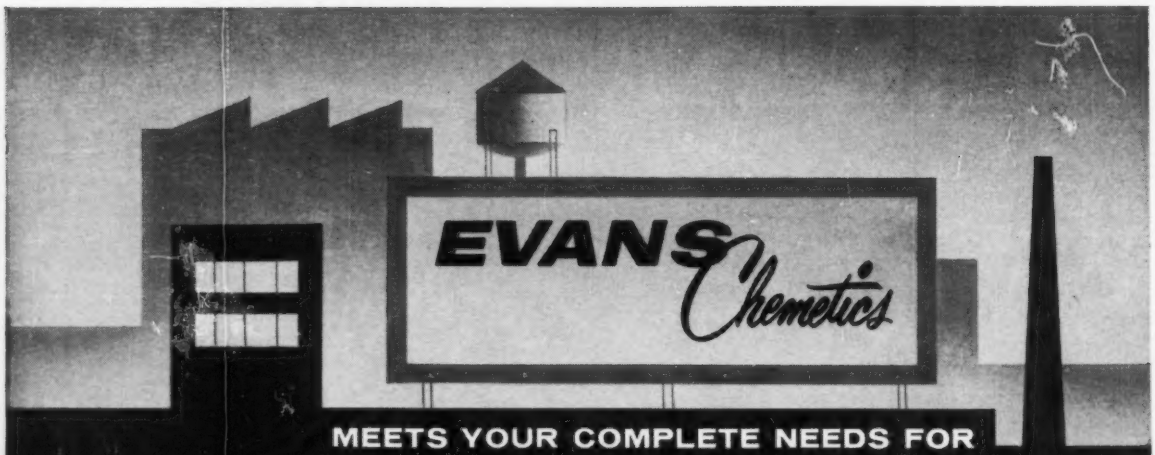

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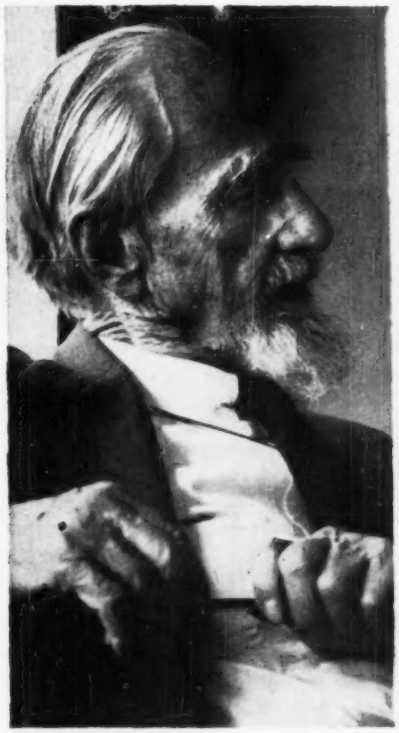
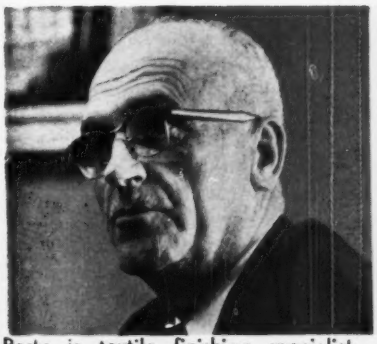


CW PHOTOS—M. SCHREIBER

J.V.N. Dorr heads group, promotes lightweight substitute for concrete.



Parks is textile finishing specialist, also has setup for concrete testing.

Rudolph is water supply expert, has background in mining and concrete.

Othmer has wealth of experience with materials such as wood, plastics.

Doolittle concentrates on solvent-resin work, solves tank lining problems.

New Team Tackles Building Material Posers

Oft-traveling and with diverse interests, the five members of Dorr Consultants, pictured here, haven't found it easy to get together since the formation of their firm last fall. But last week they took time just before a rare group meeting to reveal plans that will draw them into a tightly knit team that—for a fee—may help take the guess work out of selecting materials for plant and building construction.

Each group member is a specialist or consultant in one or more fields. For example, the group's leader, venerable octogenarian John V. N. Dorr, who last week received an honorary doctorate in engineering from Polytechnic Institute of Brooklyn, is an authority on mining and metallurgy. Arthur Doolittle is well known in solvent-resin technology; Donald Othmer, in a range of chemical and engineering subjects; W. George Parks, in catalysis, textile finishing, solvent extraction and organic synthesis; William Rudolph, in potable and industrial water supply. Their total of chemical and engineering experience is over 200 years.

Fitting Parts Together: "We felt that by pooling our knowledge of one field, we could do an infinitely broader and stronger consulting job than many others already in that field," said Doolittle.

It took several months to fit the many pieces of their experience together, come up with the building-materials specialty. Here's how they finally assembled the parts:

"In addition to being a plumber," said Othmer, referring to his chemical engineering background, "I've worked with the pulp and paper industry—particularly in the disposal of waste liquors. This has led to interest in building papers and wallboards—particularly hardboards without a chemical resin binder. The lignin of the wood is used as a resin with the addition of a small amount of chemical activator."

Othmer, who heads the department of chemical engineering at Polytechnic Institute of Brooklyn and is co-editor of the Kirk-Othmer "Encyclopedia of Chemical Technology," has also worked with monomers for plastic and resin formulations. This dovetails with Doolittle's background in solvent-resin technology and experience in the formulation and manufacture of paint, lacquer and adhesives. In fact, Doolittle is responsible for setting up one major chemical company in the surface-coatings business.

Across the Board: This extensive background would tend to serve both the suppliers and the consumers of construction materials, but Othmer feels that it is more likely to best serve

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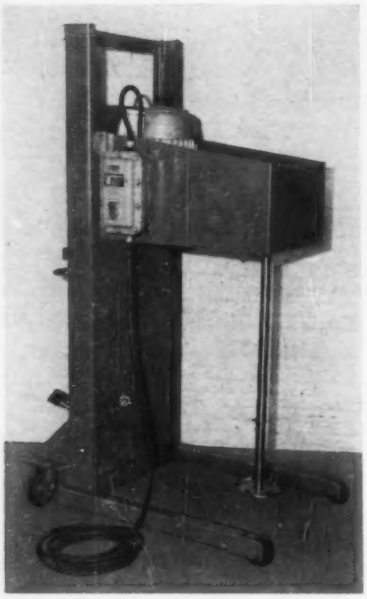

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the suppliers—for example, in developing new formulations. And Dorr's analysis of Doolittle would seem to confirm this: "He has a reputation for solving research problems."

On the other hand, Doolittle points out, his coatings background prepares the group to make across-the-board evaluations and recommendations of tank linings—work that could be of direct value to the chemical plant in selecting materials.

Rudolph's civil engineering background ties in with tank linings. He has helped waterproof and line tanks in the paper industry. And, as a water specialist, he has worked on design and construction of numerous dams and tanks. He has managed 14 plants producing roofing materials, gypsum and asphalt. As chief engineer of copper, tin and other mining operations in South America, he gained intimate knowledge in the building of large housing projects for laborers —particularly of prefabricated, concrete-slab construction.

Parks, who heads the department of chemistry at the University of Rhode Island, has a testing laboratory at nearby Pawtucket, is set up to run analyses of concrete formulations. "There is nothing remarkable about this, except that it has to be done. There are so many concrete formulations possible today that it often takes considerable test work to find the best one for a particular service," he says.

Contacts: Parks' laboratory is the only one participating directly in the group's operations. In many cases the group feels that the experimental work in building materials has already been done. "The biggest service we can perform is knowing how and where to gather the facts, and then in offering judgment that will best fit a particular application," says Doolittle.

The services of Dorr Consultants are available at about $200/day, although long-term contracts may work out at a rate different from this.

The group is counting on its diversity of interests to help, rather than hinder, when it comes to assembling specialized information. The group members who are involved in formulations research are already following the development of many potential building materials. For example, Parks' work in textile finishing and Othmer's in foamed materials jibe for future applications of foam-coated textiles.

Rudolph's background is partly in the metals field.

"We don't want to set ourselves up as experts in all building materials. But we do have a raft of friends in the business," says Doolittle. And the group is also counting on its wide range of contacts to help it get answers quickly.

'Futuristic' Experience: Dorr, who began his career working for Thomas Edison and who has remained active as honorary chairman of the board of Dorr-Oliver, Inc., terms his experience with most building materials as "a casual acquaintance that is mostly futuristic."

Actually the acquaintance is more than casual. Dorr has an active interest in lightweight aggregates as a substitute for materials such as concrete. Most promising material: synthanite, a product of the waste from the reaction of calcium fluoride and sulfuric acid in the production of hydrogen fluoride.

Rudolph has just returned from a fact-gathering trip to Europe where synthanite is gaining rapid acceptance as a building material. Dorr expects the first major use in this country to be in flooring—not only in new construction but also in heavy-duty flooring repairs.

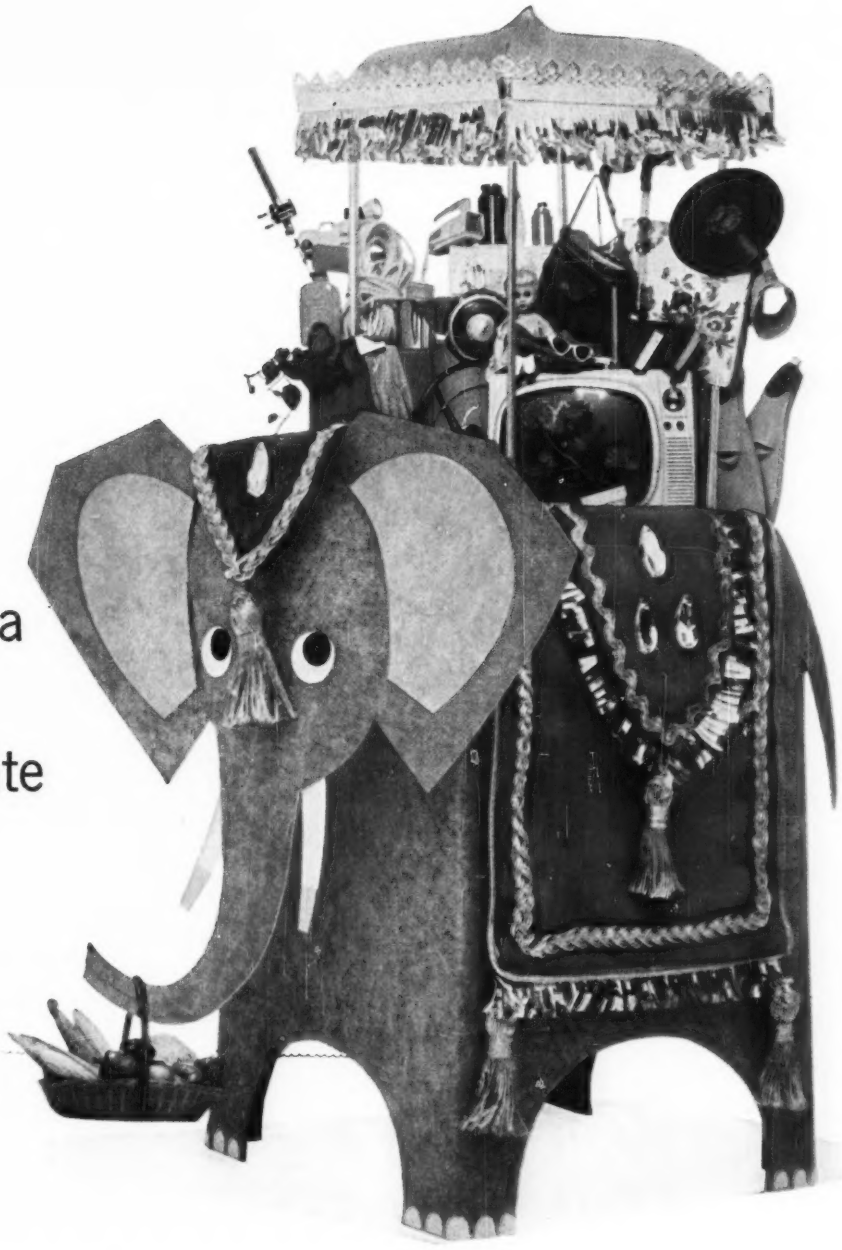
Rudolph stresses the building maintenance aspects of the group's consulting efforts for all construction materials: "Many times, people find out too late that they have chosen the wrong building material to start with. A big part of our future lies in helping them out of their difficulties."

Not Retiring: Doolittle explains that if the group finds it needs personnel with specialized experience in materials or services beyond the scope of the present members, it is ready to quickly expand—temporarily or permanently—to meet the need.

"We're not operating as a nice group for retired people," Doolittle says. The group was set up with balance in mind. Dorr and Rudolph are past what is usually considered retirement age, and Doolittle is fast approaching it, but retirement age for Parks and Othmer is a number of years off.

With a wide range of new building materials constantly appearing on the market, the need for consultants with their broad backgrounds likely will help them allay any letup in activity.

Vasco da Gama sailed an uncharted route



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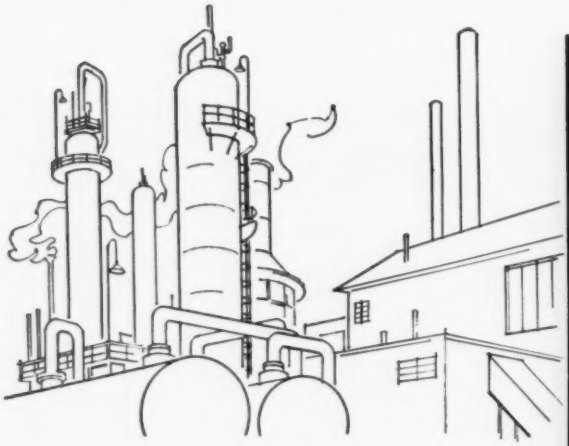
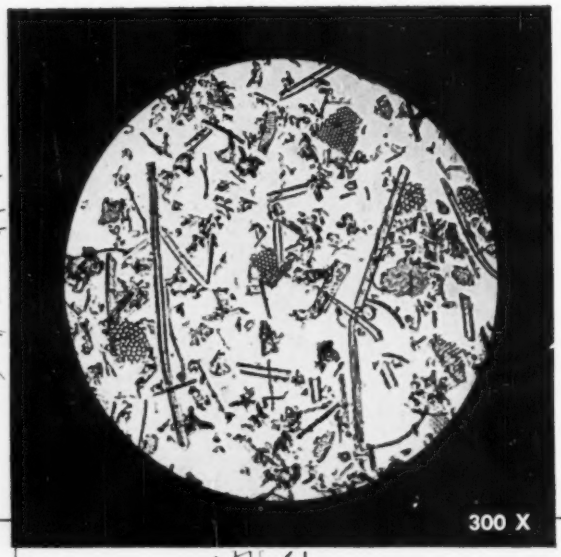
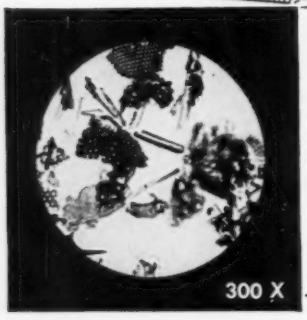
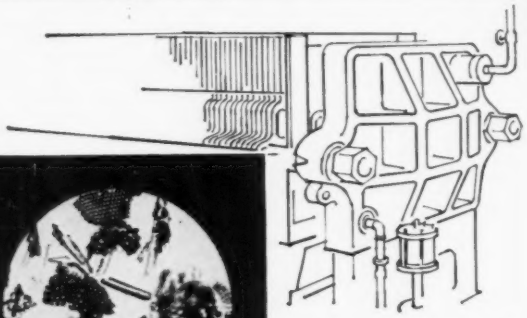




For flow rate plus clarity—Hyflo Super-Cel has the right combination of large and fine particles. Heavily used in chemical processes such as caustic soda production.





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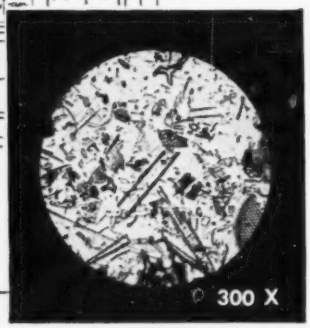
For maximum clarity—Filter-Cel has a relatively fine particle size distribution. Used in producing lard, salad oil, other hydrogenated oil products.



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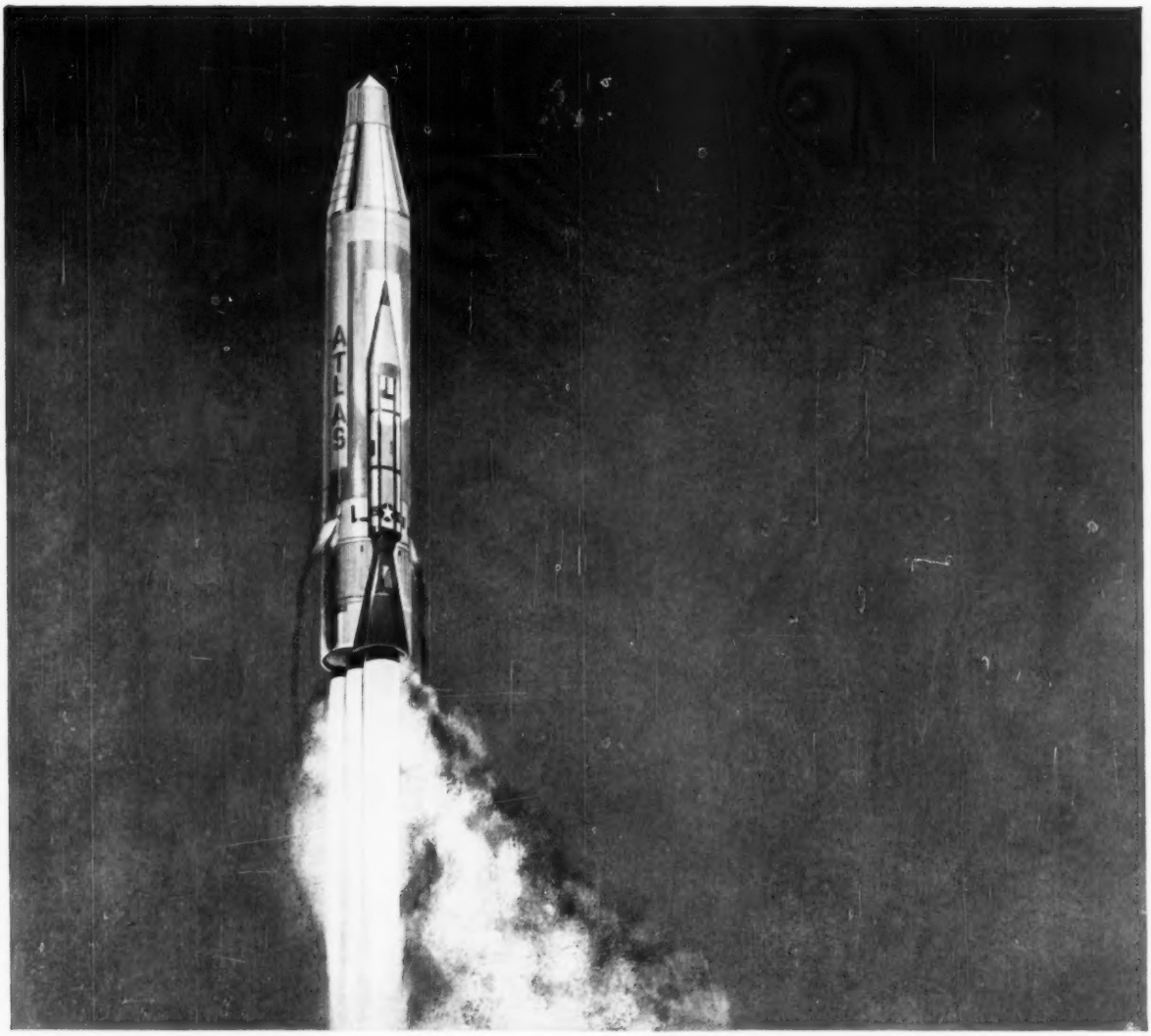

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Market Newsletter

CHEMICAL WEEK
June 25, 1960

Another West Coast ammonia producer will increase its tabs. Valley Nitrogen Producers Inc. will follow the recent price pattern set up by Hercules Powder in that section of the country (*CW Market Newsletter, May 28*).

Prices of ammonia will move upward in three steps. On Aug. 1 they will be increased $3 to $69/ton. Additional increases of $3/ton will go into effect Oct.1 and Jan. 1, '61, putting the opening quotes for next year at $75/ton.

So far the West Coast's two largest producers, Shell Chemical and Standard Oil of California, have not committed themselves nor have the approximately eight other producers in the area (*CW, Jan 31, '59, p. 82*).

Western producers have been unhappy with ammonia prices in this area, especially since quotes are $20-25/ton higher in other parts of the country. But the Coast's industry is faced with two problems: overcapacity and cooperatives in a position to drop prices. Co-ops actually triggered the area's price cutting in late '58.

•

Will more petroleum producers get into the naphthalene act? Right now the West Coast is rife with reports of a joint venture, involving Collier Chemical and its parent company Union Oil, to build the West's first petroleum naphthalene unit. Collier indicates it's a distinct possibility in the near future. It would be in a position to supply phthalic anhydride makers in the West; Reichhold already has a phthalic plant in operation, and Allied Chemical plans one for the Los Angeles area. Last week Collier and Tidewater announced plans to build a petroleum naphthalene unit at Wilmington, Del. (*see p. 95*).

Another Canadian anhydrous aluminum chloride unit is coming onstream. Allied Chemical is beginning startup operations of its new plant at Amherstburg, Ont., this week. Allied's subsidiary, Allied Chemical Canada Ltd., will market the output.

Just last week, St. Clair Chemical put its 4-million-lbs./year plant onstream at Sarnia, Ont. (*CW Market Newsletter, June 18, p. 132*).

•

Ajr Reduction's fourth oxygen plant in the Butler, Pa., area is now onstream. Output of the new unit will be piped to the Butler Works of Armco Steel Corp. Capacity: 120 tons/day of high-purity oxygen.

•

Salicylic acid and acetylsalicylic acid prices were raised last week by Monsanto and Dow. Salicylic acid was increased 1¼ ¢/lb. across the board, while acetylsalicylic acid went up 1¢/lb. across the board.

Reasons given: higher costs of raw materials, labor and freight, which have narrowed profit margins.

Monsanto, incidentally, is now expanding its capacity for acetylsalicylic acid at St. Louis by 25%. Increased output is expected to be available around August.

•

Another expansion of organic sulfur chemicals will begin shortly at Pennsalt Chemicals Corp.'s Greens Bayou plant at Houston, Tex. Cost is expected to be over $750,000. The new unit, scheduled for '61, is designed to meet the next five years' demand for these chemicals.

Last spring the company expanded its hydrogen sulfide capacity, will now use part of the output to make the new sulfur compounds, including a variety of alkyl mercaptans. Major use for these products: as intermediates for dyes, pharmaceuticals, insecticides and weed killers.

•

Increased production of polypropylene film is reportedly the reason behind AviSun Corp.'s price cuts last week. The film tabs have been reduced 10¢/lb.; it now sells for 70¢/lb. in 10,000-lb. lots.

Biggest outlet for polypropylene film is in the bread industry as package overwrap. Major competition here comes from cellophane and polyethylene. A new Food & Drug Administration regulation now permits the use of polypropylene film for general food applications.

AviSun Corp. claims to be the first "fully integrated" polypropylene film producer, recently completed a 25-million-lbs./year polymer plant, plus a 10-million-lbs./year unit for making the film.

•

Chemetron Corp.'s new unit at Newport, Tenn., for sodium xylenesulfonate and sodium toluenesulfonate was put into full-scale operation last week. Both products are marketed as 40% solutions, and will be geared for the Southern detergent compounder's market.

•

Commercial quantities of cyclohexylamine and dicyclohexylamine are now being turned out at Abbott Laboratories' plant at Wichita, Kan.

SELECTED PRICE CHANGES—WEEK ENDING JUNE 20, 1960

	Change	New Price
UP		
Soybean oil, crude, tanks, Decatur	$0.00125	$0.0875
DOWN		
Amyl salicylate, cns., dms.	$0.02	$0.71
Corn oil, crude, tanks	0.00125	0.12125
Tallow, inedible, fancy, bleachable, tanks	0.00125	0.05625
Vitamin B_{12}, cryst., U.S.P., 1-50 grams, vials, tins, gram	25.00	95.00

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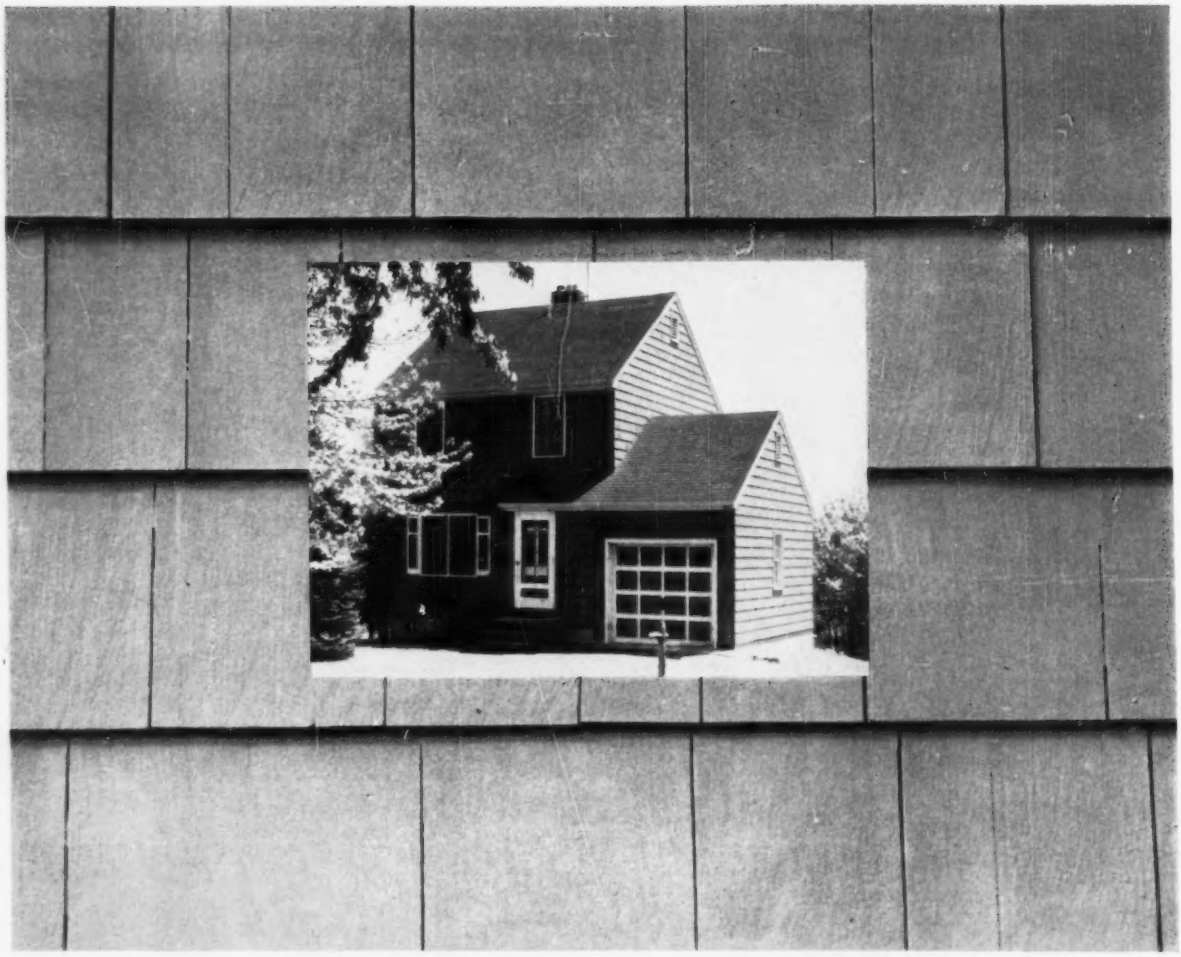

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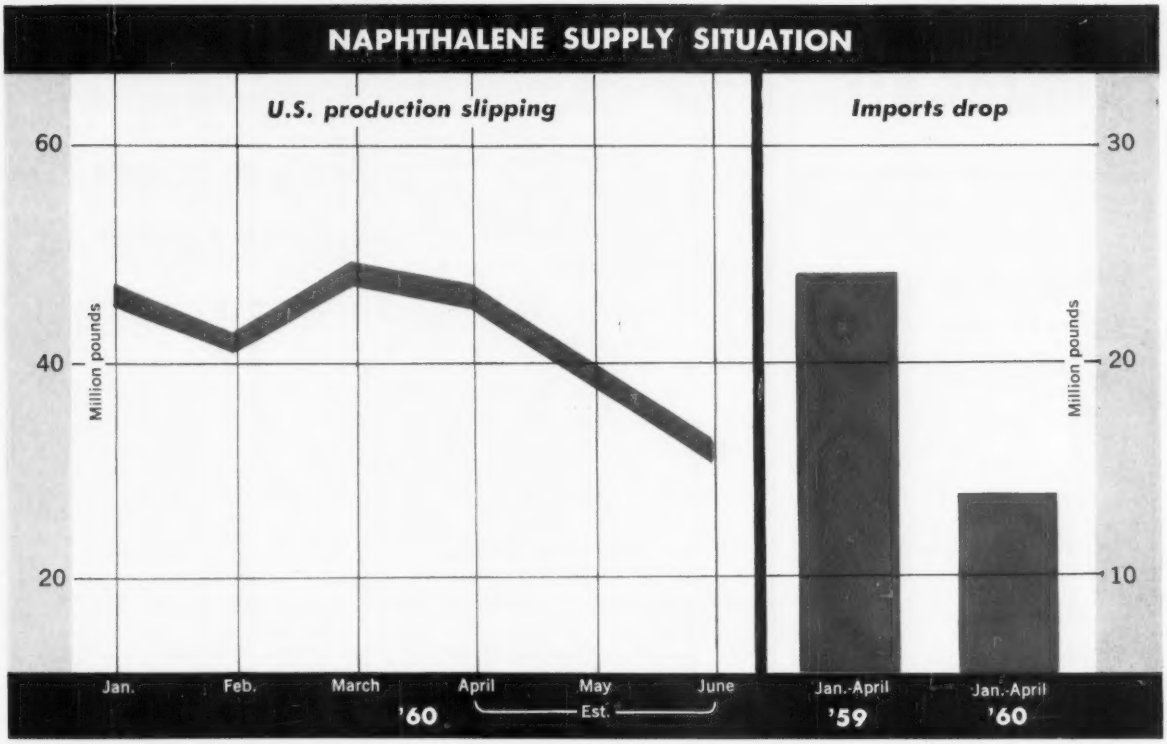

Relief Is Distant for Naphthalene Users

U. S. naphthalene production for June will be the lowest since the end of the steel strike. And with imported material still scarce, consumers will once again be pinched for naphthalene and phthalic anhydride. There's little comfort in last week's reports of two more potential producers of petroleum naphthalene, which may well portend an oversupply of U. S. naphthalene in '62.

For naphthalene consumers, the naphthalene derived from petroleum is simply coming about one and one-half years too late.

Steel Sags: Coal-tar naphthalene producers—who under normal conditions can meet requirements—are still feeling the effects of last year's steel strike. Moreover, the steel industry is now running at about 60% of capacity. Also, little help is coming now by way of imports.

During the first five months of '60, when naphthalene output was high, consumers—mainly phthalic anhydride makers—were able to meet their day-to-day requirements; but strong demand for phthalic anhydride kept them from rebuilding inventories. Naphthalene output dropped sharply in June, and no great upsurge is foreseen during the third and fourth quarters. Users, just as during last year's steel strike, are searching out every loose lot of economically priced material.

Phthalic anhydride producers can't predict when the tight supply situation will ease, expect to do little or no inventory building during the next six to eight months.

Imports Scarce and Dear: Imports offer little relief. European use of phthalic anhydride is heavy, providing a ready outlet for home-made naphthalene. Meanwhile, other parts of the world such as South America and Japan are boosting their output of phthalic anhydride, are thus competing with U. S. consumers for scarce worldwide supplies.

And the price of European naphthalene isn't right. Offers are being made at 15-18¢/lb.—well above the 6¢/lb., which will be quoted by all domestic producers on July 1 (*CW Market Newsletter, June 18, p. 131*).

Some observers feel that the supply/demand ratio for European naphthalene may now be coming into better balance. This could mean more material available for export later this year. Nevertheless, world competition and premium prices will continue to plague domestic purchasing agents.

Worldwide competition for naphthalene has goaded some countries, such as Italy and Japan, to bypass naphthalene, use the ortho-xylene route to phthalic.

And, Russian and Polish material, which was once plentiful, is almost off the market now. Home needs, plus reciprocal trade agreements, are now the main outlets for this material. Russia is reported to be in the process of upping phthalic anhydride capacity. One plant is now in operation, and three others are planned.

Three to Go: Early last week, the news broke of Sun Oil's petroleum-naphthalene plant at Toledo, Ohio. Then Collier Carbon and Chemical and Tidewater Oil revealed a joint

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MARKETS

venture to build a unit on the East Coast. Although such a joint venture had been rumored, the decision, coming on the heels of Sun Oil's announcement, took many by surprise. These units will bring petroleum-naphthalene capacity to over 225 million lbs./year by '62.

Sun Oil's $8-million operation will have a capacity of about 100 million lbs./year, is expected to be in operation by the end of '61 (*CW Market Newsletter, June 18, p. 131*).

Collier-Tidewater's unit will be located at the Tidewater refinery in Wilmington, Del. Construction is expected to get under way before the end of the year. Cost of the facility is $3-4 million, with initial capacity expected to be in excess of 50 million lbs./year. Completion date is set for the end of '61.

Tidewater will operate the naphthalene unit as well as supply the petroleum raw material. The process will be Collier's contribution, is based on a patented process of Union Oil.

Ashland Oil and Refining Co., which unveiled its plans earlier this year, has already started clearing the site for its $5-million plant at Catlettsburg, Ky. Capacity will be 75 million lbs./year. All equipment has been purchased, and construction is expected to get under way shortly after July 4. Target date for completion: Feb. '61.

Price Still Big Factor: Although the asking prices for petroleum naphthalene are not, of course, fully guaranteed—they will depend on cost of manufacture in the new units—current quotes are in the range of 5.7-6¢/lb. Coal-tar prices are now 6¢/lb. but were down to 5¢/lb. earlier this year. Since coal tar is a by-product material, naphthalene from this source will continue to dominate the market, while petroleum material will become a second source of supply.

Easier Days Ahead: At this point it's hard to assess the effect that the '62 introduction of petroleum naphthalene will have on the U. S. market, since several uncertainties must still be resolved—e.g., getting a plant into full-scale operation, turning out material at an economical price.

Certainly, with petroleum becoming another naphthalene source, the future U.S. supply will be easier than during the past year and a half.

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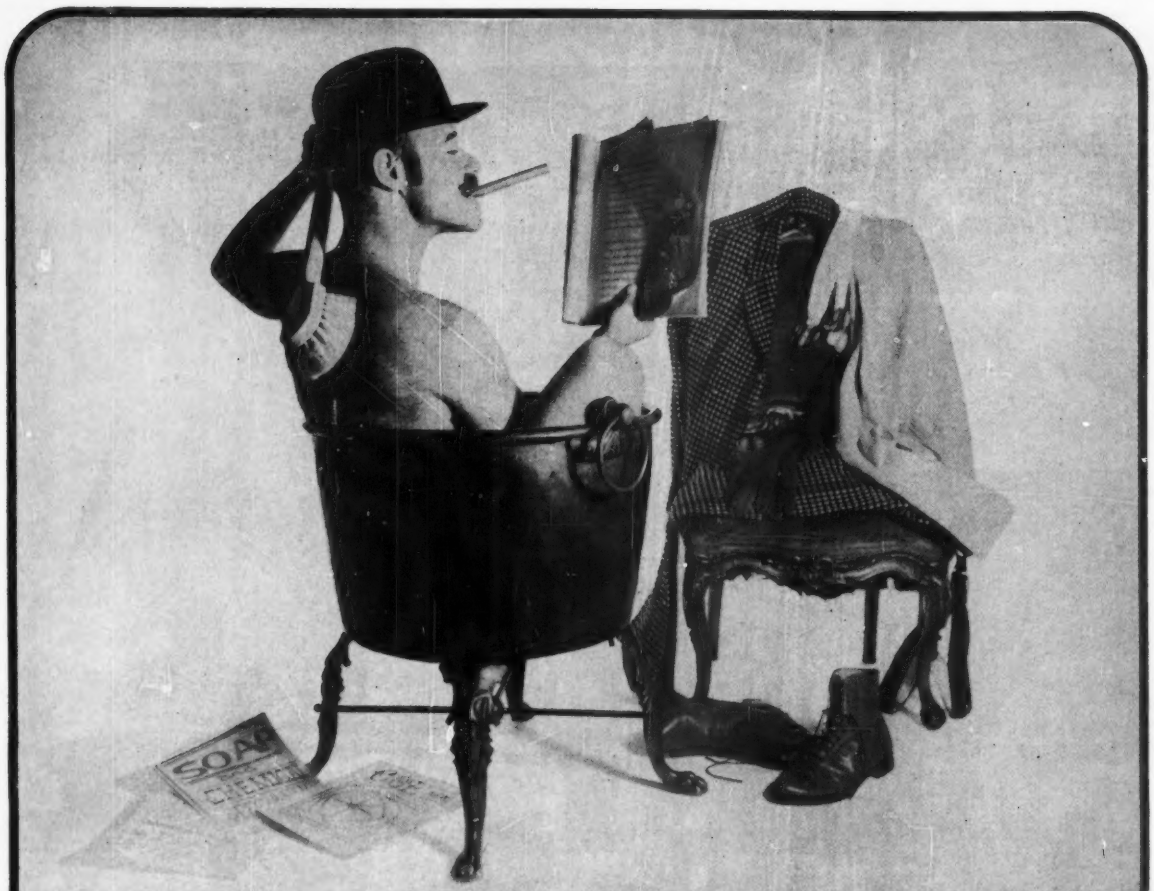

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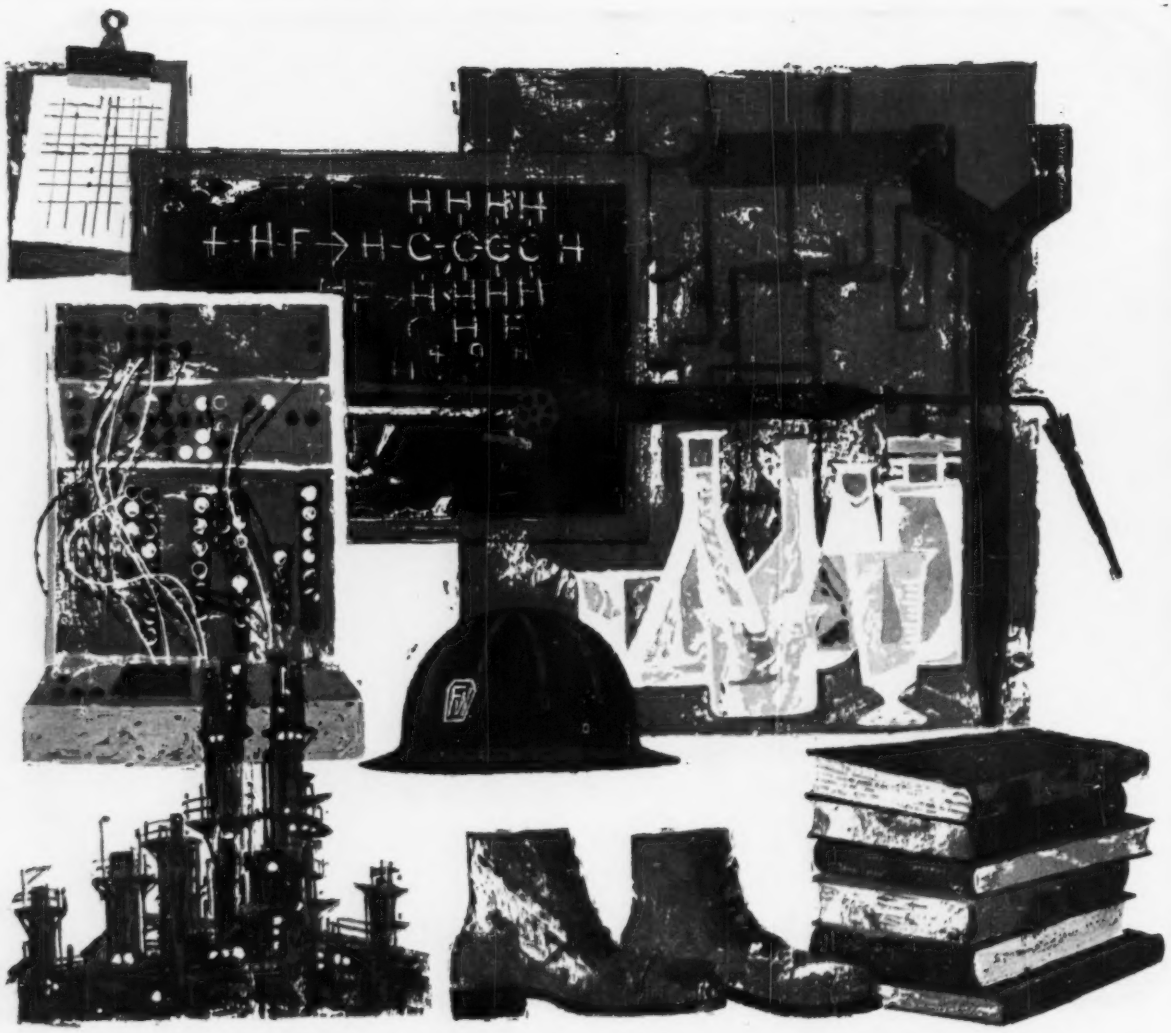

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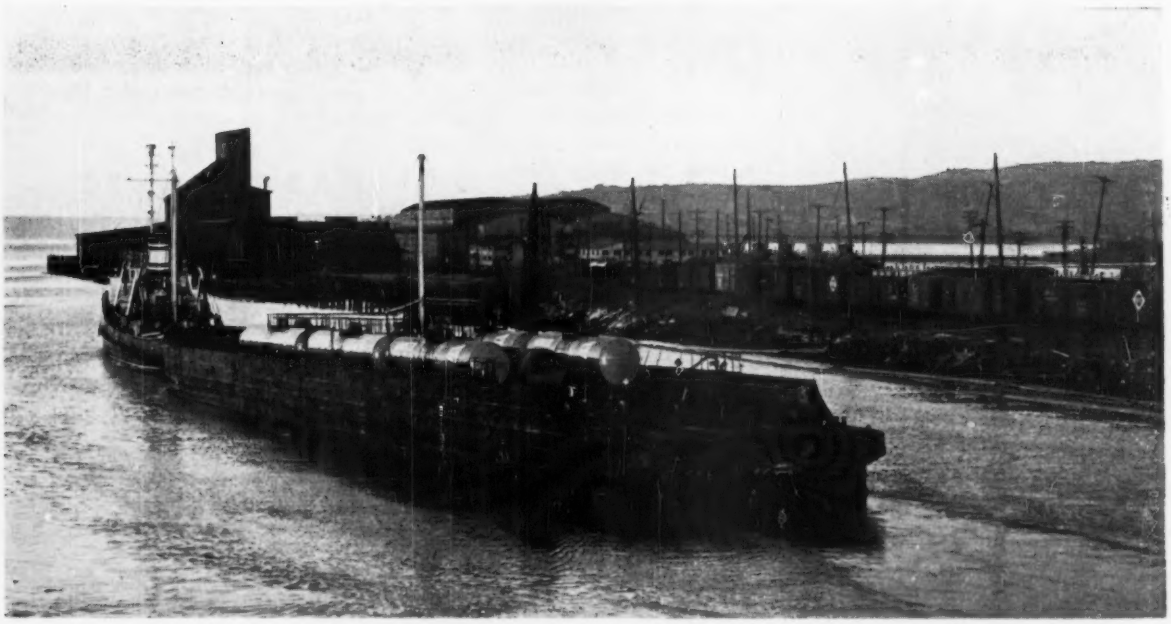

Barge men fear possible railroad entry into water operations, but some chemical shippers welcome it.

Chemical Shippers Ponder Rails' Barge Bid

Moves by Dow Chemical Co. and Olin Mathieson Chemical Corp. to intervene in the highly controversial bid by two railroads to buy the Hay barge line underscores chemical industry concern this week over the issue of unrestricted rail entry into inland waterway operations. Earlier this month Dow and OM filed petitions before the Interstate Commerce Commission seeking to have a part in the case, which may prove to be the hottest transportation issue of '60.

At stake for CPI shippers using the Hay line: possibility of lower freight charges on many bulk commodities (fertilizer materials, solvents, petroleum products, sulfuric acid, caustic soda, benzene, sulfur) resulting from grants of joint or through rates. Another possibility: that absorption of the barge line could lead to more severe rate competition by railroads against water carriers.

CPI traffic men view the move by the Illinois Central and Southern Pacific railroads to gain unrestricted ownership of the John I. Hay barge line—one of the nation's 10 largest—as the major test of the railroads' right to diversify broadly into other modes of transportation (*CW, March 19, p. 35*).

CPI Shippers' Views: A few CPI shippers have come out against the railroads' proposed purchase. Example: W. H. Joubert, traffic manager of the Bowaters Southern Paper Co. (Calhoun, Tenn.), told ICC Examiner Hyman Blond that "railroads do not understand water transportation. Their only attitude toward it has been to kill it off."

Other CPI traffic men have supported the railroads' bid, noting that under the railroads' operation the Hay line could afford to grant them lower rates as well as attractive combination or joint rates. Among them: Harold Schmidt, Phillips Petroleum; Howard Young, American Zinc, Lead & Smelting; Walter Knorst, International Minerals and Chemical.

Knorst told CHEMICAL WEEK: "We favor the railroads in this situation because of their continuing loss of traffic and taxation problems, which become more complex each year. If the railroads got into the waterway business, they could take advantage of free waterways and strengthen their position. And, if rates were reduced, we could probably increase our sales area."

But generally CPI traffic men have stayed on the sidelines in the struggle. One reason: many companies simply have not yet determined exactly how the proposed Hay purchase might affect their operations, don't want to move before they are certain.

Dow and Olin Mathieson say their petition to intervene in the case does not represent a stand for or against the proposed rail purchase. Rather, they point out, it preserves for them the right to introduce testimony, evidence or appeals at any time it's in their interests to do so.

Railroad Expansion: To purchase the barge line, the Illinois Central and the Southern Pacific have set up the jointly and equally owned Midwest Barge Co.

Hay operates six towboats and 90 barges on the Mississippi River and Gulf Intracoastal Waterway systems, does considerable business moving bulk chemical process materials. Moreover the Hay routes parallel the two railroads' right of way, almost mile for mile, in the Mississippi Valley.

Outlook: Most CPI traffic men look

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for an extended legal battle, perhaps a year, before final decision on the proposed purchase is reached. Faint hopes among some waterway officials that ICC might dismiss the case at the outset have disappeared.

Doubtless the railroads are driving hard to win this test case, thus paving the way for further barge line acquisitions. And they're getting some shipper support, too.

Policing Borax Exports

The problems of controlling strategic chemical exports popped into the spotlight again last week. The U.S. Commerce Dept. permanently blacklisted four foreign companies for their roles in trading U.S.-produced borax with East German customers.

The action prevents the four from buying anything in the U.S. as long as export controls exist.

The agency acted following disclosure that 100 tons of U.S.-produced borax was sold by two Swedish and two French firms to East German customers for military use—presumably for use in boron-containing high-energy fuels.

According to Commerce officials, a U.S. exporter sold the borax to a Swedish buyer. Then the four foreign firms bought the material under false pretenses for transhipment to Iron Curtain customers. Identification of the U.S. seller and the original Swedish buyer was withheld by officials because the two firms reportedly had no knowledge of the deal.

Named were Evald Selart of Selart & Co. (Goteborg, Sweden) and Nysaters Fabriker A/B (Goteborg); Adam A. Luttway of Toutimpex (Tangier) and Comptoir General De Recuperation (Paris).

Borax Problems: The Commerce Dept. considers borax one of the worst problem products among strategic materials. Its uses vary widely, from innocuous products such as eye washes and diaper powders, to exotic, high-energy fuels for space vehicles. For that reason, the material is on the "positive," most restrictive, list of controlled strategic exports.

To export a product on this list, a U.S. export licensee must affirm that he is not selling it behind the Iron Curtain, must also submit affidavits from his customers that they will not tranship the Goods to Russia or to countries in the Communist camp.

Commerce Dept. officials take action against negligent companies as well as those definitely proved guilty. Penalties vary from suspension of export licenses to permanent blacklisting.

DATA DIGEST

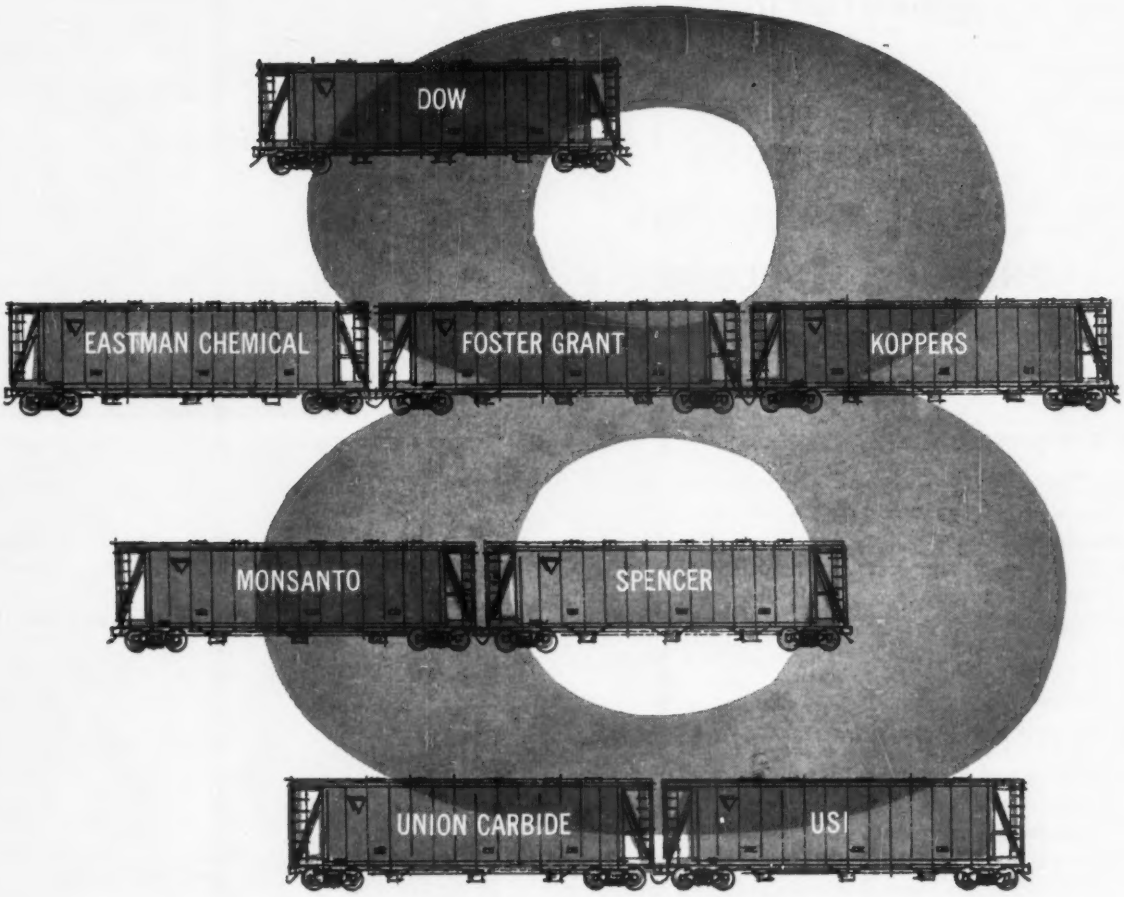
• **Acid Anhydrides:** Two new booklets are available that outline the properties and uses of some acid anhydrides. Booklet I-8R discusses dodecenylsuccinic anhydride, details its applications as an intermediate in the production of plasticizers, rust inhibitors, leather-treating agents and pharmaceuticals. Booklet I-2R presents basic data on hexahydrophthalic anhydride, used in coatings, resins, adhesives and insecticides. National Aniline Division, Allied Chemical Corp. (New York).

• **Tapes and Adhesives:** Directory (121 pages) classifies company's products by application, lists tape and adhesive materials used in several hundred industries. Permacel Division, Johnson & Johnson (New Brunswick, N.J.).

• **Hydrogen Peroxide:** Five new bibliographies on hydrogen peroxide are now available as separate booklets. Subjects covered: hydrogen peroxide in the preparation of organic peroxides; physical and spectral properties of peroxides; new developments in epoxidation and hydroxylation of unsaturated compounds; hydrogen peroxide and organic peracids as oxidizing agents; and reactions and decomposition mechanisms of peroxides. Solvay Process Division, Allied Chemical Corp. (New York).

• **Lithium Compounds:** Supplement No. 7 to the "Annotated Bibliography on the Use of Organolithium Compounds in Organic Synthesis" is available at cost of $2/copy, includes 487 abstracts of lithium papers appearing in '59. Total abstracts in entire set: 2,287. Lithium Corp. of America (Title Insurance Building, Minneapolis).

• **Dyeing Synthetic Fibers:** Revised 86-page booklet discusses dyeability, colorfastness and fabric properties of important synthetic fibers and fiber blends when dyed with company's dyestuffs. General Aniline & Film Corp. (435 Hudson St., New York 14).



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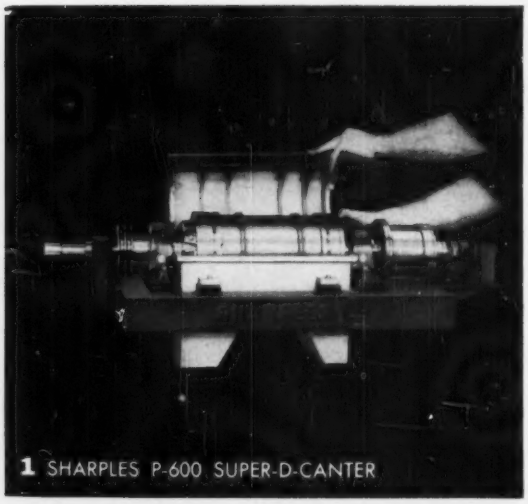

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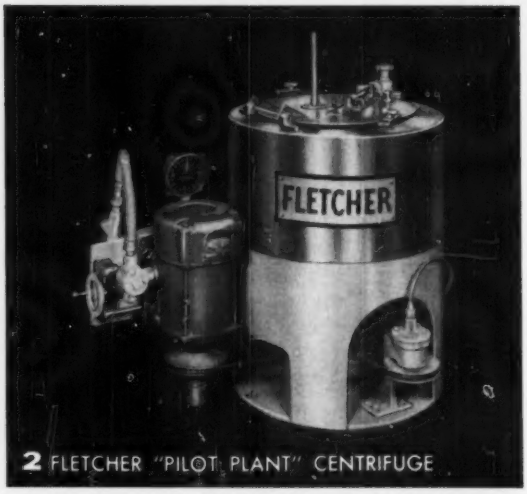

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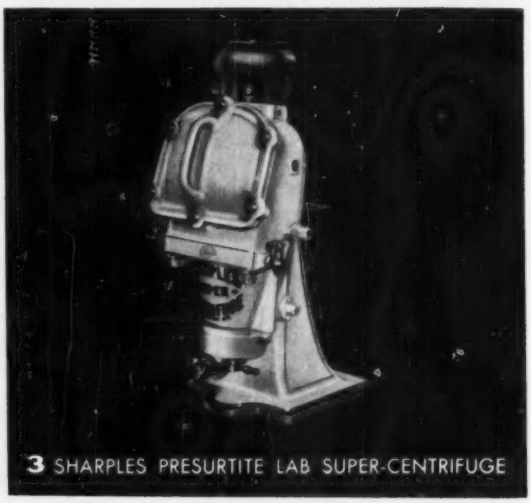

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Vitro geologists strike beryllium pay dirt in Topaz Mountains.

Scrambling for Beryllium

Stepped-up prospecting activities by major mineral producers has placed beryllium in the headlines this week in two widely separate areas of the country. Vitro Minerals Corp. reports discovery of large-scale deposits of a new mineral form of beryllium are located in the Topaz Mountain area of western Utah; International Minerals & Chemical Corp. is launching prospecting operations around Spruce Pine, N. C.

According to reports from the Topaz Mountain area, the scramble to stake out beryllium claims bears all the earmarks of the early days of the uranium rush. In addition to Vitro's geological survey team, other exploration parties are said to be combing the area for Beryllium Resources, Inc. (Salt Lake City), Du Pont, Food Machinery and Chemical Corp.'s mineral division (Pocatello, Ida.), and Combined Metals Reduction Co. (Salt Lake City).

Chief attraction of the Topaz Mountain ore: the disseminated deposit (i.e., the beryllium compound is scattered throughout the rock, rather than being concentrated in seams or veins) is amenable to simple surface-mining techniques. Vitro geologists also believe it to be a new mineral form of beryllium (they're making arrangements to name the ore "vitroite"), which may permit economic processing via the acid leach route currently used to process 660 tons/day of uranium ore to crude concentrate at Vitro's Salt Lake City mill (*CW, March 1, '58, p. 60*).

Conventional beryl ore (a complex beryllium aluminum silicate, $Be_3Al_2Si_6O_{18}$) is very resistant to acid attack, generally requires calcining or other high-temperature treatment to make it reactive. Hydrofluoric acid can be employed for leaching, but excessive consumption of acid by the silica content of the ore makes this route too costly for commercial operations.

If the new ore eliminates the need for high-temperature treatment, Vitro could start with sulfuric acid leaching, as it now does with uranium, to convert the beryllium mineral into sulfates. The water-soluble products—chiefly beryllium sulfate, plus aluminum, iron and other impurities—could then be separated from the insoluble silica in much the same way that uranium solutions are recovered.

Most difficult part of the beryllium purification process is the complete elimination of aluminum. Because impurities in the grain boundaries of beryllium metal have an adverse effect on the metal's ductility, this step may be even more critical than it is in the production of uranium concentrate, which undergoes several other purification treatments before it is made into metal.

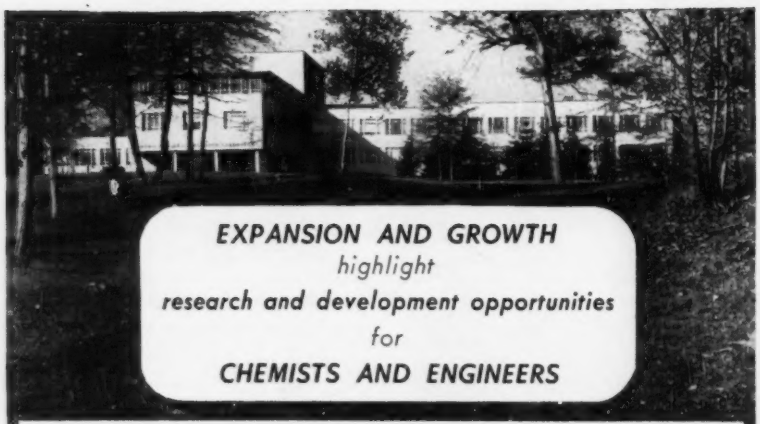
Known processes for purifying beryllium include:

- The Joy-Windecker process, using ammonium hydroxide and precise pH control to precipitate aluminum and iron from a solution of beryllium hydroxide, which is later crystallized washed, dried and ignited to beryllium oxide.
- The Copaux-Kawecki process, in which sodium fluoferrate III (Na_3FeF_6) is mixed with the finely ground ore and heated to high temperature. Selective reaction with beryllium oxide in the ore produces sodium beryllium fluoride (Na_2BeF_4), which is then water-leached and reacted with caustic soda to precipitate beryllium hydroxide.
- The Sawyer-Kjellgren process, employing fractional crystallization of ammonium aluminum sulfate, which is insoluble in beryllium sulfate solution containing 10-15% free ammonium sulfate. Beryllium sulfate is heated to 1300 C to yield an alkali-free oxide.

Although it's still too early for Vitro to have formulated a complete plan for exploiting its new mineral discovery, beryllium processing would appear to fit in well with the company's broad objectives. For one thing, it will need a new processing operation to install in the Salt Lake City mill when the firm's uranium contracts expire. And the corporation's recently reorganized Vitro Chemical Division (*CW Technology Newsletter, Feb. 27, p. 71*) has an avowed interest in the development of the newer metal and refractory materials.

It's also possible that the processing of Topaz Mountain ore could lead to profitable by-product operations.

Market Question Mark: It's difficult



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to predict the long-range effect of a sizable domestic beryllium source. Chief interest in the metal, to date, has been in the nuclear field (beryllium is used as a neutron reflector and high-temperature fuel-canning material) and in the aircraft and missiles field, where beryllium's low weight and high strength afford important advantages. Industrial uses for beryllium metal suffer the severe limitations imposed by high costs.

Beryllium metal now sells for about $64/lb.; fabricated products may cost three times as much. This high fabrication cost minimizes the over all effect of savings made in the early processing stages. The short-range market outlook indicates that present suppliers of beryllium metal—Beryllium Corp. and Brush Beryllium—will be able to handle the demand for some time to come.

Domestic Sources: IMC's interest in beryllium appears to follow the more conventional approach of producing ore as a by-product of other mining operations. (Bulk of beryl imports is hand-picked, high-grade ore —11-13% BeO—from mica, feldspar and lithium ore-producing areas in Brazil, Argentina and India.) IMC currently mines feldspar in the Spruce Pine region, decided to explore the beryllium possibilities after several "beautiful" ore samples were found in that vicinity.

Although beryllium still has a long way to go before it makes the grade as an important material of construction, the existence of sizable domestic ore sources should go a long way toward removing the industry's dependence on foreign sources and vulnerable supply lines.

Multiple vs. Single

Last week the American Assn. of Cost Engineers, meeting in Houston, Tex., heard the pros and cons of multiple-contract projects versus single-contract projects.

Dow's George McGovney presented the case for multiple-contract lump-sum projects; Fluor's W. I. McKay presented the case for projects under the responsibility of a single engineering contractor. Conclusions? Indefinite; showing that a well-managed program under either system can be chosen.

McGovney's description of "multi-

ple contract" projects put down ground rules for the discussion. He listed a dozen crafts — from engineering design, and erection of major equipment like towers, tanks, heat exchangers, pumps, and the piping network to area surfacing, paving and landscaping—as typical of those that could be handled either as a one-contract project or on a multiple-contract basis.

In a single scheduled project some of these jobs start long before others, but in every project most of these jobs are in progress at the same time, for at least a short period. In a multiple-contract project the owner-company divides these crafts among three to 10 separate contracts, which it schedules on its own.

In contrast, a single-contract project is one for which the owner-company contracts with a single engineering company, which in turn subcontracts for the specialty jobs.

Here's McGovney's list of advantages Dow has obtained through its multiple-contract system, and McKay's counterarguments:

- *Time:* The multiple method give the shortest possible building program.

McGovney cited an 18-month project as an example. McKay told of two Fluor projects similar in scope to Dow's but which had been completed in nine and 14 months.

- *Advanced Techniques*: Dow's system allows research to work in parallel with engineering and provides flexibility to get modern practices into the project.

Fluor's counter: incorporating research into engineering is not so much organization as it is time available and the quality of people involved.

- *Specialization*: Multiple contracts allow each type of specialist to work within his qualifications.

Fluor says that engineering contractors operate similarly, but without letting any one subcontractor interfere with the others.

- *Definition*: Multiple system allows a dependable definition of expenditures. Fluor says a single overall contractor can provide the same sort of guarantee.

- *Close Planning*: Multiple contracts allow each contractor to have his section of the project so well described that is able to fit into a tightly planned schedule.

Fluor says all major contractors

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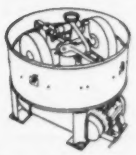

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carry such a planning department.

Convincer: Dow's most convincing argument, however, was a chart that showed total construction and contractor personnel compared with capital expenditure both before and after Dow had switched to the multiple-contract system. This chart indicated that Dow's system has reduced total manhours by 50%. McKay declared that this chart covered periods with great variation in construction efficiencies.

Interpretation: When two companies such as Dow and Fluor can tick off a proposition's five main features and disagree by 180 degrees, the first conclusion is that another point on which they agreed—that each project must be qualified by special conditions—is the only one that holds. Yet there remains a second, more general, conclusion: specialty subcontracts are an extremely important but frequently neglected phase of engineering design. Dow's plot of man-hours versus capital expenditures shows that the coordination of subcontracting is almost as important, economically, as the engineering itself. If Dow and Fluor have top-quality personnel doing this job, what remains is for their competitors to emphasize this function also.

Boosting Solid Fuels

Solid rocket propellants are taking another step forward this week—the third in as many months.

Thiokol says it has successfully fired a new high-impulse solid fuel at temperatures ranging from —85 F to 300 F. Temperature sensitivity has been one of the classic disadvantages of solid propellants, compared with temperature resistance of liquid propellants.

In April (*CW, April 16, p. 104*) Thiokol Chemical Corp. revealed its continuous mixing process for solid propellants. In May (*CW, May 21, p. 86*) Rocketdyne Division of North American Aviation disclosed it had developed a solid propellant engine capable of throttling thrusts by as much as 70%.

Although Thiokol did not discuss details of its fuel, it has disclosed that it is a hydrocarbon type, with grains highly stressed in a configuration similar to those required by missile and space vehicle rocket engines.

Tracers

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Chemist—Vinylpolymer Development; successful, expanding company in New York metropolitan area has position for vinylpolymer development man with B.S. in Chemistry or Chemical Engrg plus 5 years successful experience. Liberal salary, many company benefits. P-4659, Chemical Week.

SELLING OPPORTUNITIES AVAILABLE

Experienced Salesman wanted—industrial chemicals. Chemical background preferred. Worth Chemical Corporation, Greensboro, N.C.

POSITIONS WANTED

Chemical Sales-Market Development — ACS Member—B.S. Chemical Engineering—10 years technical sales; manager industrial division. 9 years diversified technical sales service; product development, market research, advertising, production. Surfactants, organic sequestrants, specialties, organics. PW-4648, Chemical Week.

Product, Market or Sales management opportunity desired by successful mid-West Regional Manager, with broad bulk and specialty sales and marketing experience to most industrials. PW-4664, Chemical Week.

SELLING OPPORTUNITY WANTED

Export/Foreign Operations. Well-established company with office and affiliates world-wide wishes to represent basic manufacturers. Finance and market research available. Balfour, Guthrie & Co., Limited, 72 Wall Street, New York 5, N.Y.

Largest South African Importers and Distributors of industrial chemicals wish to represent American manufacturers as agents and distributors. Write to—Joseph, Bond & Jeans Inc., 20 West 43rd Street, (Salmon Tower), New York 36, N.Y.

Chemical Engineer wants lines for petroleum, latex, plastic, textile and coating industries. Mid-Atlantic states. RA-4641, Chemical Week.

Indiana Mfrs. Agt. seeks lines. Sales Eng. Ch. E. Degree exp'd in Power and Process Ind. Sales will establish sales agency in Indpls. on Sept. 1, 1960 to represent mfrs. of Chem. Process Equip't. Do you need effective sales coverage in Indiana? Write RA-4682, Chemical Week.

Westgerman Chemical Manufacturer and dealer in solvents, heavy and fine chemicals, intermediates, located near Frankfurt-Main, is interested in sole agency or representation for American Chemical firm in Westgermany. If interested reply to RA-4687, Chemical Week.

Latin American U.S. field representative residing Panama travelling area seeks additional line any countries. RA-4690, Chemical Week.

SPECIAL SERVICES

High Vacuum molecular distillation for large quantity runs on a toll basis. Molecular Distillations, Inc. 527 Madison Avenue, New York 22, Tele: Plaza 3-6527.

Research Chemist in the oil industry taking a three week vacation in Europe, France, Germany, Low countries, etc. Undertaking any contract and report evaluation work in the oil or petro chemical fields. Leave New Cork City July 3rd, arrive in Paris July 4th, going to International Congress on Catalysis, secret clearance, top references, legal and patent knowledge. SS-4609, Chemical Week.

BUSINESS OPPORTUNITY

Needed—Products with unlimited national potential. A successful marketing organization has both capital and manpower available. Write giving full particulars. BO-4657, Chemical Week.

Capital available. We want to purchase an interest in or control of chemical or electronics company with growing future. Also interested in men with ideas to serve as basis for forming such company. BO-4683, Chemical Week.

FOR SALE

Send for Revised Illustrated Circular on our $3,000,000 chemical plant liquidation at Orange, Texas. All T316 SS equipment including tanks, columns, heat exchangers, filters, centrifugals, pumps, valves, pipe, etc. Perry Equipment Corp., 1415 N. Sixth Street, Philadelphia 22, Pa.

Hexamethyleneadipamide (6-6 Nylon Salt), Hexamethylene Diamine, Adipic Aid suitable as raw materials of high purity for Textile and Plastics production available for sale. Attractive prices and terms. Quotations and laboratory test samples airmailed on request—S.I.C.I. s.r.l.—Parbigo (Milan), Italy.

Plasticizer: Lowest Priced primary phthalate plasticizer; excellent solvation and efficiency, excellent compatability with secondary plasticizers. Regularly available in transport trucks or drums. Mercury Chemical Corp., Edison, N.J., Liberty 8-1540.

Chemical tank trailers, stainless steel, rubber-lined, pressure, all types for sale or lease. Hackett Tank Company, Inc., 541 South 10th Street, Kansas City, Kansas, Phone: Mayfair 1-2363.

Struthers-Wells 630 sq. ft. T316 SS single effect evaporator, 2" OD tubes. 30# WP. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Horiz. T316 SS heat exchanger, 1960 sq. ft., ASME, 1953. Perry Equipment Corp., 1415 N. 6th Street, Philadelphia 22, Pa.

Dark Dioctyl Sebacate Bulk, 32¢ lb. DBS Plast, Virgin Bulk 35¢ Isoprene-Enjay Virgin 3 drums $.15 Virgin Neopentyl Glycol-20-100# drums. Trimethylol Propane 20-100# drums. Barrett Pyridine 15A 3 orig. drums $.35/lb. DDA Plast., Virgin, 20 drs 37¢/lb. FS-4592, Chemical Week.

WANTED

Wanted Rotary Vacuum Dryer or Ribbon Blender—Horizontal 125# ASME, coded jacket, approximately 1,200 gallons or 160 cu. ft. capacity. Helical ribbon. Steel or stainless steel considered. Please send details and asking price to W-4574, Chemical Week.

CHEMICALS WANTED

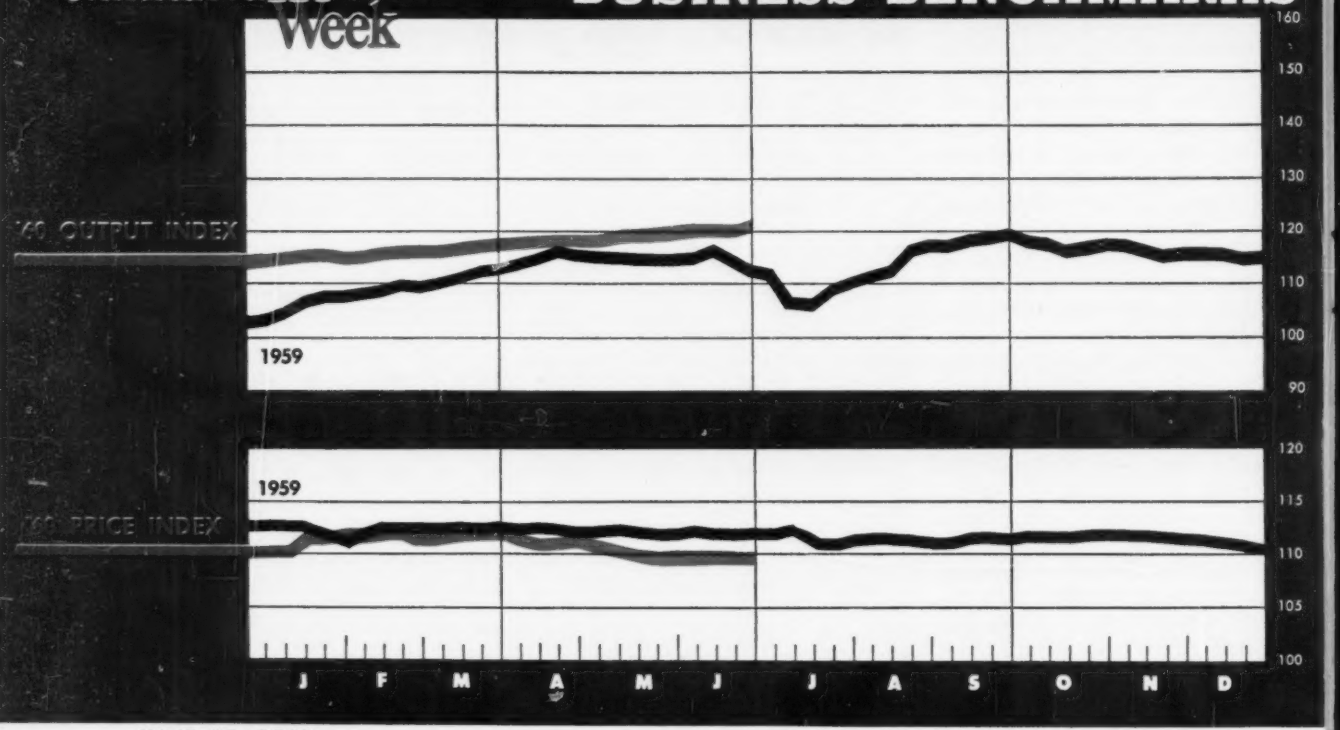
Surplus Wanted—Chemicals, Pharmaceuticals, Oils, Acids, Plasticizers, Resins, Dyes, Solvents, Pigments, Etc. Chemical Service Corporation, 96-02 Beaver Street, New York 5, N. Y. HAnover 2-6970.

WANTED/FOR SALE

This Tracer Section can be used whenever you are looking for or offering Equipment, Plants, Supplies, Chemicals, Opportunities, Special Services. The rates are low—just call or write Classified Advertising Division. Chemical Week, P.O. Box 12, N. Y. 36, N. Y., LOngacre 4-3000.

Chemical Week

BUSINESS BENCHMARKS



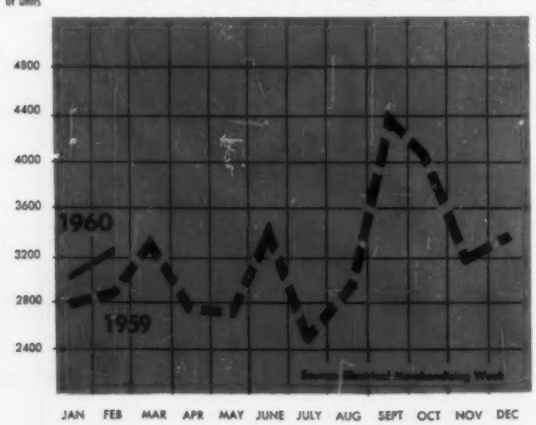
JUNE 25, 1960

WEEKLY BUSINESS INDICATORS	*Latest Week*	*Preceding Week*	*Year Ago*
Chemical Week output index (1957=100)	122.2	121.8	115.5
Chemical Week wholesale price index (1947=100)	108.0	108.5	112.1
Stock price index (12 firms, Standard & Poor's)	52.87	52.48	56.67
Steel ingot output (thousand tons)	1,775	1,756	2,620
Electric power (million kilowatt-hours)	13,766	13,134	13,503
Crude oil and condensate (daily av., thousand bbls.)	6,772	6,781	7,010

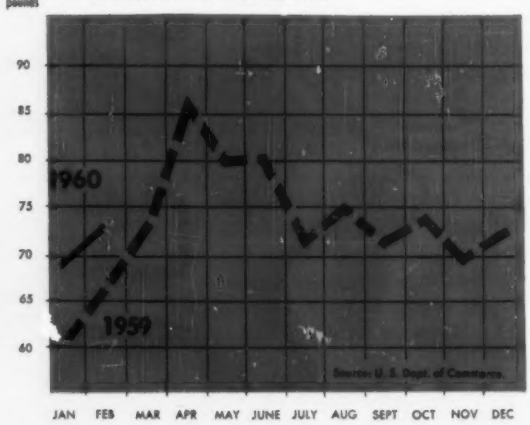
TRADE INDICATORS (million dollars)	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	*Preceding Month*	*Year Ago*	*Latest Month*	*Preceding Month*	*Year Ago*
All manufacturing	31,103	30,837	30,266	54,649	54,342	51,052
Chemicals and allied products	2,376	2,298	2,090	4,079	4,058	3,696
Petroleum and coal products	3,213	3,158	3,080	3,352	3,332	3,367
Paper and allied products	1,035	1,054	1,034	1,545	1,539	1,463
Textile products	1,276	1,203	1,253	2,704	2,674	2,482

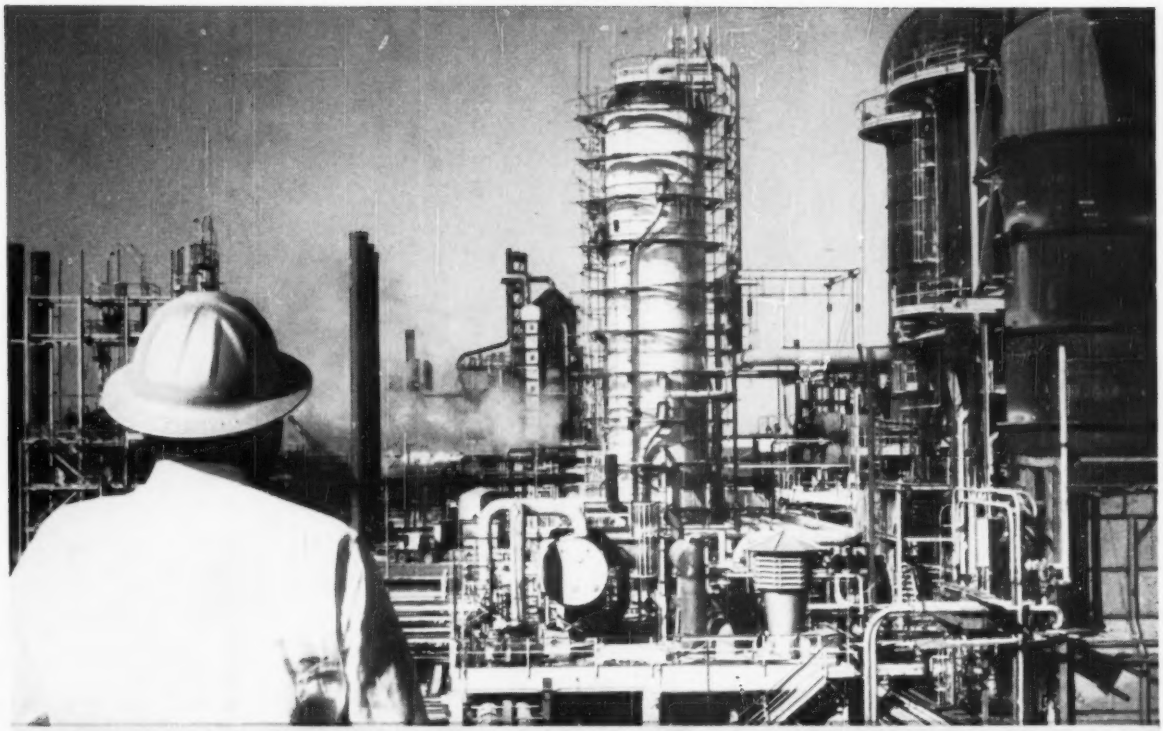
CHEMICAL CUSTOMERS CLOSE-UP

FACTORY SHIPMENTS OF MAJOR APPLIANCES



SHIPMENTS OF EXPLOSIVES





PROBLEM: An effective solid catalyst was sought for the alkylation of isobutane with ethylene to produce diisopropyl, a high octane gasoline component valuable for its high lead susceptibility and excellent volatility.

SOLUTION: Use of BF_3 with certain hydrated salts produces active alkylation catalysts which bypass many problems encountered with known catalysts. These new catalysts can be used at low temperatures—thus avoiding undesirable side reactions and mixing problems due to changes in viscosity.

NEED A BETTER CATALYST?

INVESTIGATE B&A® *BORON TRIFLUORIDE*

The versatility of boron trifluoride and its cost-cutting advantages make it a catalyst to be considered in almost any organic synthesis problem. The use of BF_3 as an alkylation catalyst in the preparation of diisopropyl (described above) is an excellent recent example. The next synthesis problem BF_3 will help solve may well be *yours!*

Here are some of the reactions catalyzed by BF_3: polymerization, alkylation, esterification, nitration, sulfonation, halogenation, isomerization, arylation, cyclization, hydration, acylation, and there are more!

Baker & Adamson has long been the leader in BF_3 research and production. We were the first to introduce boron fluoride etherate to industry. We pioneered in shipping the compressed gas by tube trailer transport—making it readily available in large commercial quantities. Steady, dependable supply is assured when you call on B&A for boron trifluoride.

Write today—for technical data on the properties and typical uses of B&A Boron Trifluoride gas or any of its complexes listed. Attach company letterhead, please.

- Boron Trifluoride, Di-acetic Acid Complex
- Boron Trifluoride, Di-n-Butyl Ether Complex
- Boron Trifluoride, Dihydrate (Stabilized)
- Boron Trifluoride, Ether Complex, Tech.
- Boron Trifluoride, Ethyl "Cellosolve" Complex
- Boron Trifluoride, Hexamethylene-tetramine Complex
- Boron Trifluoride, Monoethylamine Complex
- Boron Trifluoride, Monohydrate
- Boron Trifluoride, Para-cresol Complex
- Boron Trifluoride, Phenol Complex, Tech.
- Boron Trifluoride, Piperidine Complex
- Boron Trifluoride, Triethanolamine Complex
- Boron Trifluoride, Urea Complex

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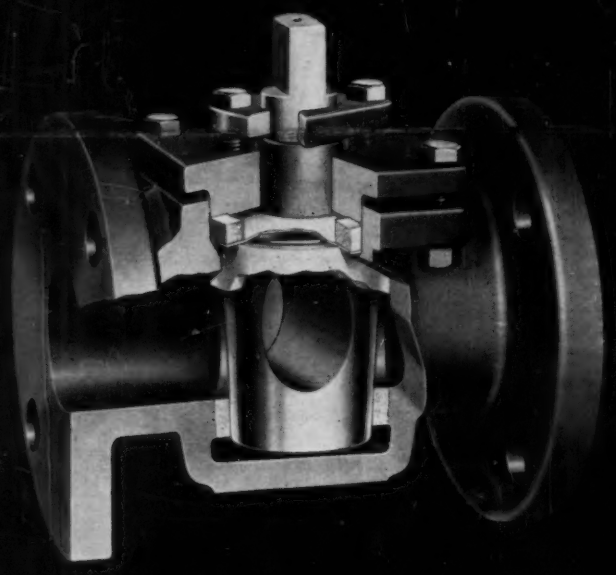
40 Rector Street, New York 6, N.Y.

WHAT USERS SAY ABOUT THE NEW DURCO TYPE G SLEEVELINE

The new Durco Type G SLEEVELINE is a non-lubricated plug valve. A Teflon sleeve is pressed into a ductile iron or stainless steel body; a machined plug, Teflon diaphragm and gasket, a thrust collar, and a self-aligning adjuster make up the rest of this trouble-free, non-lubricated plug valve.

Available in ductile iron or stainless steel, screwed or flanged ends from ½" through 2", and in ductile iron flanged ends 3", 4", and 6". 150 psi rating.

Write for bulletin V/12.



sulfuric acid service

"Entirely satisfactory in service on 66°Bé sulfuric acid after 8 months."

latex user

"Valve on Latex service since May 1, has given no trouble. Other valves (gate, globe, ball, wedge, lift plug) failed because Latex build-up froze the valve."

chlorine gas service

"In service for ten months on chlorinator handling dry chlorine gas at 50 psi —ambient temperature. Formerly used lubricated valve which gave considerable trouble due to freezing."

caustic service

"Valves used on cell liquor, concentration 12%, at 160°F. After one month valve was removed and inspected. All movable parts were free, no wear was evident. Valve was reinstalled and has been in six months continuous service with completely satisfactory performance."

phosphorus user

"Used on yellow phosphorus at 160-200°F. Valves are doing fine. Thanks for a product that works—and a valve that I can turn with one hand without breaking my back."

solvent handling

"Valves performing very well on toughest solvent service after five months, where lubricated plug valves were regularly replaced due to sticking caused by leaching out of lubricant."

DURCO
CORROSION RESISTING ALLOYS & EQUIPMENT

THE DURIRON COMPANY, INC., Dayton, Ohio

Valves • Pumps • Filters • Process Equipment